Marine Review

SHIP OPERATION SHIPBUILDING CARGO HANDLING

The National Publication Covering the Business of Transportation by Water

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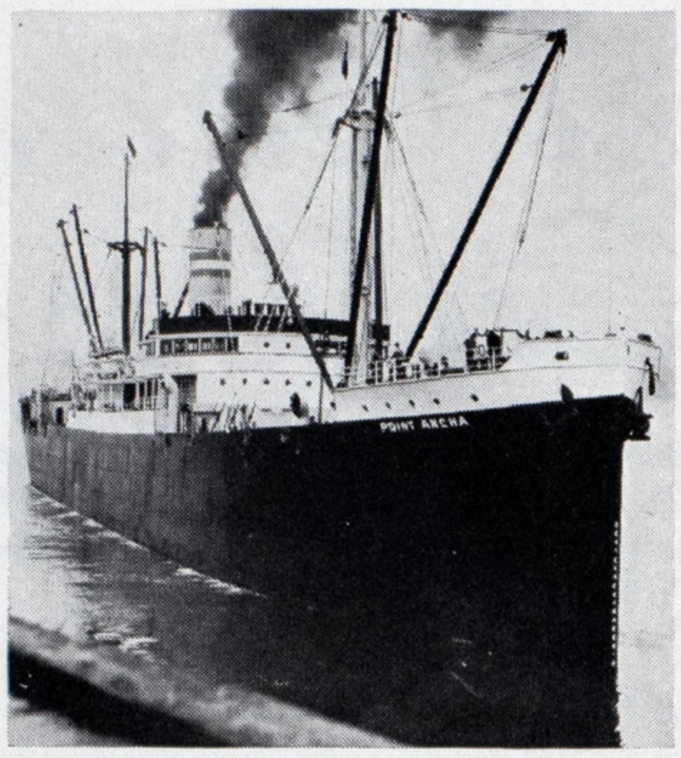

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Marine Review
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SHIP OPERATION - SHIPBUILDING - CARGO HANDLING
Volume 64 November, 1934 Number 11

The Morro Castle Disaster, What it Implies

IT IS unthinkable that the lessons learned from the MORRO CASTLE disaster shall go unheeded. It is equally important that any new laws to empower regulations to correct the conditions which made such a tragic disaster possible should be based on a courageous, intelligent, calm, sane analysis of all the facts. To allow hysteria to play a part would only defeat the ends sought.

It is now clear from the preliminary official report made by the local inspectors of the steamboat inspection service in New York that, broadly speaking, to apply the lessons of the disaster four factors must be considered.

These four factors are: the quality of personnel on board ship, the efficiency of ownership management, the care and diligence of government inspection in accordance with existing laws and the amendments and additions to the law to make it more effective in securing safety.

To every officer, not only in the American merchant marine, but in all other maritime countries, the MORRO CASTLE disaster brings vividly to mind his great responsibility when an emergency arises. In the ordinary course of events, years may go by without facing the test. Negligence or lack of devotion to duty during routine conditions is the certain way to prepare for failure in time of disaster. Every master of a ship will feel more keenly his very real responsibility and will make every effort to improve the personnel and discipline on board.

Every steamship management will realize more fully than ever its very serious responsibility to leave nothing undone which is humanly possible to make certain that when the emergency comes it will be met in accordance with the highest traditions of the sea. Responsibility for the training and competence of the personnel aboard ship, in the final analysis, must rest on the management. Management must see to it, not only that the law is fully complied with in regard to all safety devices, but also that the personnel on board ship is drilled in the efficient use of such devices. One disaster emphasizes very definitely the use of certain devices, another disaster would equally definitely emphasize the use of others. Laxity must not be tolerated with respect to the efficient operation of any device on board which bears a relation to safety.

It is, of course, always easy to find fault with supervision and inspection when something goes wrong. But the fact remains that the inspection service of the government just as in the case of officers on board ship and management ashore must feel more keenly its responsibility to see to it that the existing rules and regulations are strictly and justly enforced. The layman does not appreciate the multiplicity of factors involved in such inspection and enforcement. Nevertheless, a greater degree of safety will be assured if every inspector performs his duties with vigor, intelligence and devotion. The government's responsibility is clear. No doubt there are some rules and regulations which, if enforced to the letter, would cause delay and inconvenience to the shipowner. The rules and regulations must be framed so that they are in fact reasonable and fully operative otherwise no matter what the intent is they are useless.

This disaster, as others before it have done, will bring to light the necessity of changes and additions to the law in order to correct some existing conditions which obviously have the tendency to impair safety. When the present investigation is completed there is no doubt that a number of specific changes and additions will be recommended. The present salvage law, for instance, is not suitable under modern conditions. There should, of course, be no question of delay in sending out an appeal for help because of possible loss to the company on account of salvage claims.

QUEEN MARY,

Cunard White Star Superliner Launched

ON SEPT. 26 at 3:11 p. m. Queen Mary, in the presence of the King, the Prince of Wales, cabinet officers and distinguished guests from all parts of the world, after having cut the ribbon releasing a bottle of Australian burgundy to crash against the bow, pressed a button launching the giant Cunard White Star liner which a moment before she had christened with the statement, "I am happy to name this ship QUEEN MARY."

It is estimated that 200,000 persons in and at all points of vantage surrounding the yard of the builder John Brown & Co. Ltd., Clydebank, Scotland, attended the launching. It was really a national ceremony. A heavy rain fell throughout the day. The royal party and guests occupied a special glass enclosed platform.

In his speech of welcome to the King and Queen Sir Percy Bates, chairman, Cunard White Star, Ltd., said:

"On behalf of my fellow directors and myself, and of all those connected with the building of this great ship, I beg to offer to Your Majesty and the Queen a hearty welcome to Clydeside, and to express our gratitude to Your Majesties for coming here today.

"Your Majesties' presence on this memorable occasion is a symbol of the appeal that enterprise and faith always make to this country, which remains ever young although so old.

"Those qualities have brought us through our difficulties from the first beginnings of our story, and while they are needed now no less than before, our constant possession of them makes our future sure.

"Your Majesties realize as fully as any of your subjects the strains and stresses which test us today in every aspect of life; and on the sea which means for this island the very artery of our existence, the general dislocation of the world has made itself felt in a very special degree. British shipping of all kinds has been going, and still is going, through a period of acute crisis; and the right attitude on our part is surely neither to complain nor to acquiesce, but to take the course of true confidence and adventure. That, Your Majesties, is the justification and inspiration of this new ship and her launching by Her Majesty, the Queen, is the happiest send-off for her on her high mission."

To the welcoming speech the King replied:

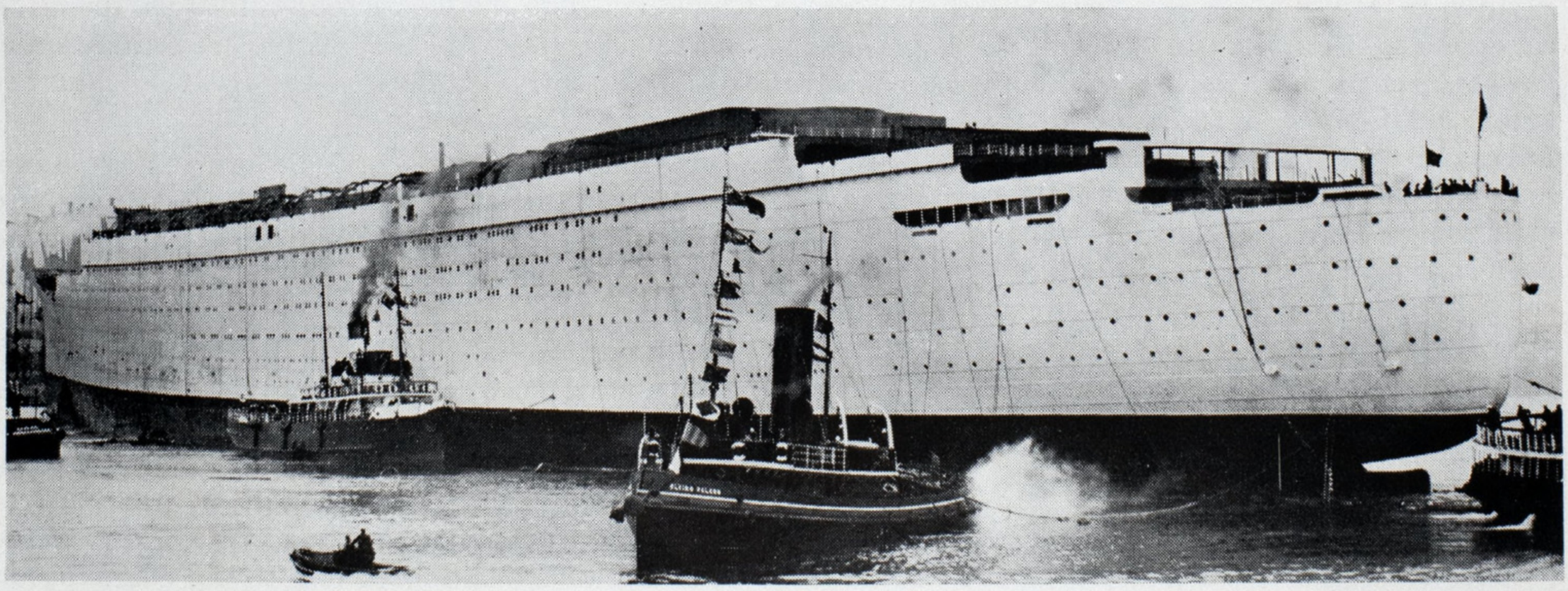
"Samuel Cunard built his ships to carry mails between the two English-speaking countries. This one is built to carry people of the two lands in great numbers to and fro, so that they may learn to understand each other. Both are faced with similar problems and prosper and suffer together. May she in her career bear many thousands of each race to visit the other as students and return as friends."

Vincent Delport, European manager of MARINE REVIEW, attended the launching. His impressions follow:

"The lanch of the ship was a conspicuous success. All responsible for the launching arrangements deserve the highest praise. The direction of the slipway is such that the ship, as soon as floated, would enter at least partly the River Cart (see diagram on opposite page). On the left is the fitting basin where the vessel is to be completed. About five seconds elapsed between the time when the Queen pressed the button releasing the triggers and the time when the vessel actually started to move. I was standing about three yards in front of the bow of the ship. After about five seconds a few small jerks were observed and then the vessel glided smoothly and without a hitch until she came afloat. The entire operation lasted just over one minute.

"The launch was so successful that it might be said to have been uneventful. What surprised me was that the hull stopped soon after leaving the slipway, appearing hardly to have cleared the slipway. It appeared that only a relatively small proportion of the chains which had been arranged to act as a brake came into play. When the vessel came to a standstill and was afloat she had no inclination whatsoever. My impression was that the vessel did not go so far into the River Cart as had been expected. The operations necessary to bring her into the fitting basin were commenced at once. The maneuvering of the seven tugs which performed this operation was skillfully carried out. This operation was performed without incident in about one hour. It appeared that the vessel grazed the quay at one time but without damage. By 4:30 p. m. the ship was safely berthed in the fitting basin."

The launching of this liner is without parallel in the history of the British merchant marine. It is the first



Cunard White Star liner Queen Mary after launching at John Brown & Co., Clydebank, Scotland, Sept. 26, 1934

time that a merchant vessel was ever launched in the presence of the King and Queen and it is also the first time a Queen of England has performed the christening ceremony. It is also probably the first time in which the name of the vessel was first made known at the actual moment of launching.

Contract for the construction of the QUEEN MARY was placed with John Brown & Co., Clydebank, Scotland, Dec. 1, 1930. Work was suspended Dec. 10, 1931, and resumed again on April 3, 1934. It is expected she will be completed early in 1936 when she will be placed in commission on the Southampton, Cherbourg, New York service.

The policy underlying the design and construction of the QUEEN MARY is based on the great progress in naval architecture and marine engineering which makes it possible for the first time in the history of North Atlantic service for two vessels of sufficient speed and size to maintain a regular weekly service instead of the three ships which have hitherto been necessary. This purpose has dictated the speed and size necessary for its accomplishment, a sufficient speed to make the trip at all times of the year and in both directions, allowing the necessary stay in port, and a size sufficient to provide passenger accommodations for a two ship service.

Years of investigation and thousands of experiments were carried out to determine her design, form and propelling machinery. A number of leading British marine engineers served on a committee to consider and report upon the most suitable type of propelling machinery.

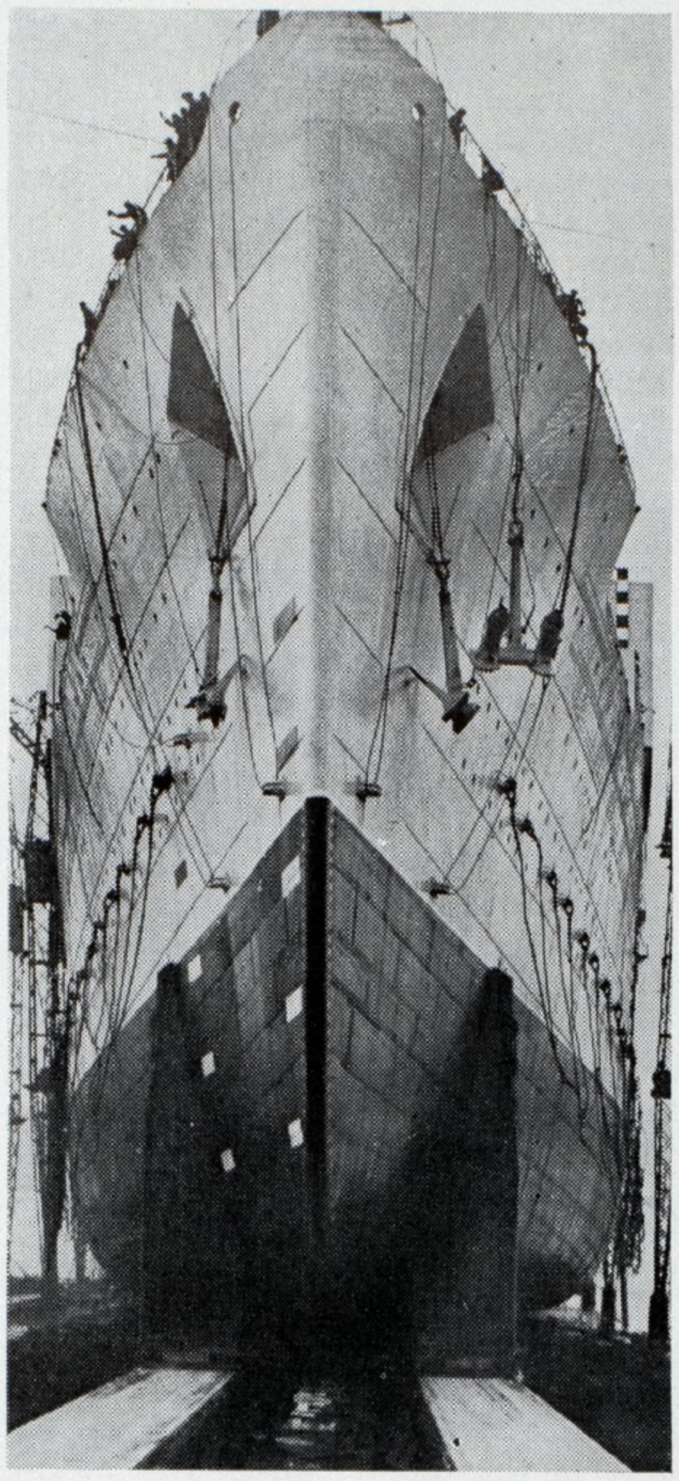
During these investigations the builder conducted thorough researches on the hull form. In the experimental tank at Clydebank, before the form was finally determined, over 7000 experiments on numerous models were carried out.

The principal dimensions of the vessel are: Length overall, 1018 feet; beam, 118 feet; height keel to top superstructure, 135 feet and from keel to top forward funnel, 180 feet, and from keel to mast head, 234 feet. Her gross tonnage will be about 73,000 tons.

The massive hull with a sloping stem, clear cut cruiser stern and three large funnels suitably raked, will emphasize the strength, power and speed of the ship. The hull structure comprises twelve decks from the sun deck down to the lower decks which are discontinued in the way of the extensive machinery spaces.

Eighteen transverse watertight bulkheads subdivide the ship, and the double bottom throughout the length of the ship, contains 70 main compartments. Taking into account the inner skin in the engine room and the side oil bunkers in the boiler room, the total number of watertight compartments below the bulkhead deck is 160.

The large stresses which have to be



Launching of Superliner Queen Mary, sponsored by the Queen of England

carried by the strength decks and sheer strakes of the shell plating, which comprise the upper flange of the main hull girder, call for the use of double plating over considerable portion of this region. To avoid excessive thicknesses and weights in this part of the structure, a large amount of high elastic limit steel has been used.

Side framing is a combination of main frames of channel section, in combination with web frame, spaced about three frame spaces apart throughout the whole length. These webs are generally carried in one transverse plane up to the strength deck, and, in association with partial bulkheads in the side bunkers and 'tween decks and webs in the superstructure houses, form a very ample provision against any transverse racking forces which may be experienced.

Where special conditions call for extra strength and stiffness the beams which are generally of channel section are reinforced with angle reverses. The beams are supported generally by four rows of closely spaced pillars or suitably stiffened pillaring bulkheads.

The massive nature of the structural work is apparent in the exceptional size of the wide spaced pillars in the machinery spaces with their great height and unusually large superimposed loads. It is also evident in the large clear spaces devoted to the principal public rooms in the superstructure, with their associated web frames, strong beams, deep girders, etc.

Another impression of the size of the vessel's structure is conveyed by the main hull castings, comprising the four shaft brackets, the stern post, and the rudder stock and frame. The total weight of this group of castings approaches 600 tons.

The erection of this enormous hull is not the least of the tasks which have been faced in the vessel's construction, when account is taken of the weights and sizes of members to be handled. It is of interest to note that the total number of rivets used in this structure is of the order of ten millions. The total weight of metal in hull and machinery of the finished ship will exceed 50,000 tons.

Propelling Machinery

The choice of the type of propelling machinery for a vessel of such magnitude and speed is a matter of primary importance as the method of propulsion adopted has a considerable bearing on the design of the ship as a whole, the arrangement of the passenger accommodations, the comfort of the passengers and the reliability and economy in operation. When the preliminary designs were considered early in 1929, a diver-

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THE accompanying diagram shows the limited space for launching the Queen Mary. It was necessary to bring her to a dead stop in a distance but little greater than her own length of 1018 feet. This was done with, perhaps, less ..difficulty than had been anticipated

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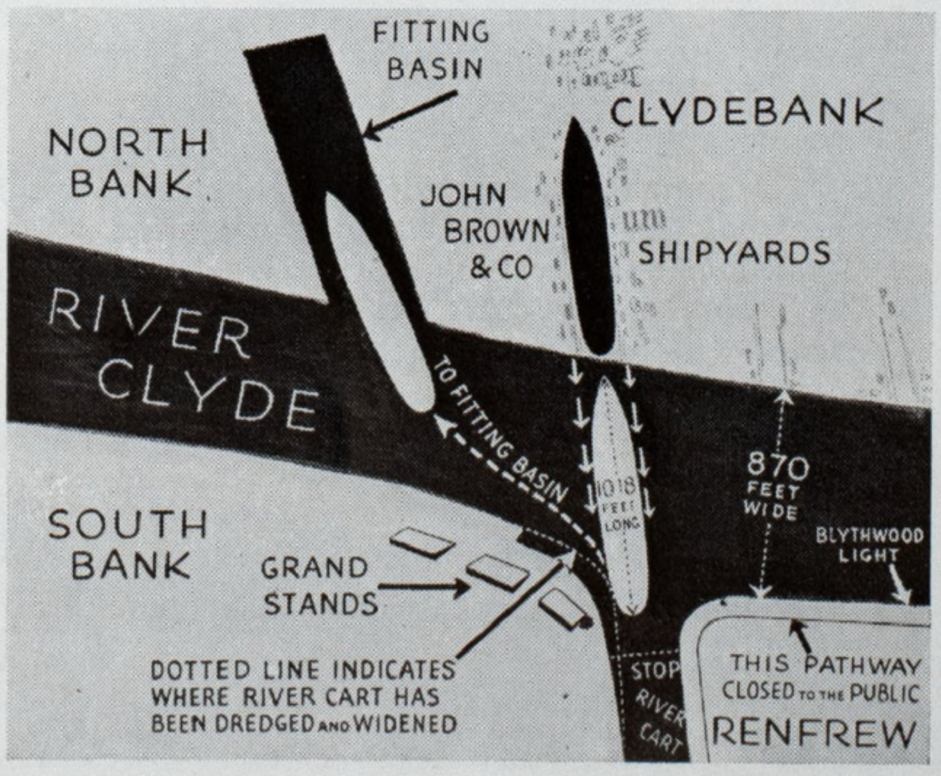


gence of opinion was held by many technical experts as to the most suitable method of propulsion for large passenger ships. Consequently the directors appointed a committee to consider and report upon the most suitable type of propelling machinery. This committee included a number of the leading marine engineers of Great Britain.

The horsepower required to give the desired speed was such that the power to be transmitted through each shaft and propeller would be the maximum ever attempted for continuous running. Reliability of propelling machinery is of primary importance and the committee gave this factor precedence over all questions of economy, as any economy which might be gained with an element of risk would be easily discounted by the dislocation of such an important service. Quietness in running is another factor of almost equal importance and the committee recognized that the greatest care is necessary in the design and manufacture of the propelling machinery in order to eliminate noise and vibration.

With these factors in mind, the committee recommended the adoption of high pressure, high temperature, watertube boilers with single reduction geared turbines as the propelling units. This propelling machinery installation was considered the most suitable from every point of view giving, as well as reliability and silence in running, the necessary weight for stability and trim, cheapness in installation cost and low fuel consumption.

The committee's recommendation was accepted. To supply the steam to develop the power requirements an installation of 24 Yarrow type watertube boilers with superheaters and large air preheaters are fitted. The working pressure is 400 pounds per square inch and the steam temperature is 700 degrees Fahr.

Four sets of Parsons quadruple expansion, single reduction, geared turbines, each direct connected to a special alloy bronze four bladed propeller of nearly 20 feet in diameter with a pitch of 18 feet, 2 inches, having a finished weight of 35 tons, constitute the propelling machinery.

The four main engines are contained in two engine rooms, two in the forward engine room which drive the two outer screws, and two in the aft engine room which drive the inner screws. The twenty-four boilers are located in four boiler rooms. The closed stokehold system has been adopted, air being forced into the boiler room and flowing thence through the air preheaters to the furnaces. This arrangement eliminates complicated and cumbersome air ducts in the boiler rooms and facilitates the efficient location of steam mains and other piping. It is also believed to give better combustion conditions with consequent economies in oil fuel consumption. It will also make for better working conditions for the staff, keeping the boiler rooms cool even in the hottest weather. Electrically driven fan units, 16 in number, supply the air for combustion purposes.

Boilers are equipped for oil fuel burning. The oil burning installation being of the latest and most efficient type. Smoke observation windows and CO_2 indicators are fitted in order to enable combustion conditions to be regulated to give the highest efficiency.

Each of the four propelling machinery units, which can be operated independently, consists of four turbines, high pressure, first and second intermediate and low pressure, and a condenser grouped around a main gear wheel. Each turbine drives a separate pinion which engages with the main gear wheel which is coupled to the forward end of the propeller shaft. The turbine revolutions are reduced to the propeller speed by means of a single reduction, double helical gear with teeth of the involute design.

The main propelling machinery and boilers have been constructed at the works of John Brown & Co., builder of the ship.

(*Continued on Page* 34)

Naval Architects Meet in New York, Nov. 15-16

THE forty-second general meeting of the Society of Naval Architects and Marine Engineers will be held in the auditorium of the Engineering Societies building, 29 West Thirty-ninth street, New York City, Thursday and Friday, Nov. 15 and 16. Twelve papers are scheduled for presentation at the professional sessions which will begin each day promptly at 9:30 a.m. The council of the society will meet at 3 p.m., Wednesday, Nov. 14 in the board room on the fifteenth floor of the Engineering Societies building.

On Saturday, Nov. 17, at 7:30 p.m., a dinner-dance will be held on the United States liner, WASHINGTON, at Pier 61, North river. An opportunity will be offered during the evening to inspect the vessel. The cost of the entire evening's entertainment is $3.00 per person. Reservations are to be forwarded to the office of the secretary of the society.

The annual banquet will be held in the grand ballroom of the Waldorf-Astoria, Forty-ninth street and Park avenue, New York City, on Friday evening, Nov. 16, promptly at 7:30 o'clock. Preceding the banquet, there will be a reception, beginning at 7:00 o'clock.

Titles of the twelve papers, names of authors and the order in which the papers are to be delivered, follow:

Thursday, Nov. 15, 9:30 a.m.

1. *Robert Fulton's Original Drawings*, by F. D. Herbert, member.
2. *Ship Structural Design*, by E. F. Spanner, member.
3. *The Efficient Length for a Given Form and Speed*, by Prof. L. A. Baier, member.

Thursday, Nov. 15, 2:00 p.m.

4. *Recent Developments in Propeller Design*, by K. E. Schoenherr, member.
5. *Measurement of Propeller Thrust on Shipboard*, by Commander H. E. Saunders, (CC) U.S.N., Council member.
6. *Development in Ground Tackle for Naval Ships*, by Rear Admiral E. S. Land (CC), U.S.N., vice president.

Friday, Nov. 16, 9:30 a.m.

7. *Ventilation of Ships*, by John F. Nichols, member.
8. *Some Examples of Arc Welded Ship Construction*, by David Arnott, council member.
9. *The Battle Cruiser*, by Commander H. E. Rossell. (CC), U.S.N., member.

Friday, Nov. 16, 2:00 p.m.

10. *Marine and Naval Boilers*, by Capt. C. A. Jones, U.S.N., member, and Lieut. Commander T. A. Solberg, U.S.N., visitor.
11. *Bunker Fuel Oil Problems*, by Capt. C. A. Jones, U.S.N., member, and Lieut. J. E. Hamilton, U.S.N., visitor.
12. *Safety in Design of Small Tankers*, by M. G. Kindlund, member.

MARINE DIESEL ENGINES,

Installed in American Merchant Craft

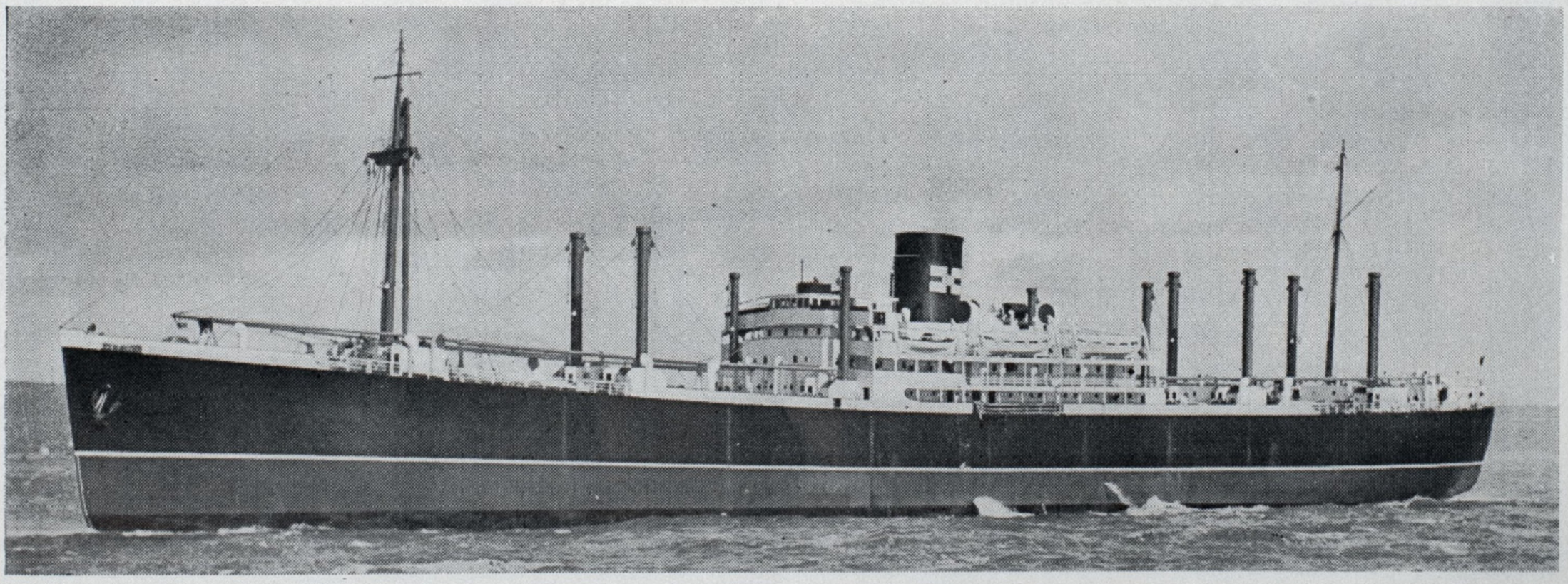
IN MERCHANT shipbuilding under way on Sept. 30 the United States had 22,225 gross tons as compared with 604,296 for Great Britain and Ireland; 149,750 for Japan; 120,868 for France; 120,816 for Germany; 74,938 for Denmark; 70,735 for Holland; 64,565 for Sweden; and 37,970 for Italy. With the very considerable fleet of American merchant vessels, now in service, overseas, intercoastal, coastwise, on the lakes and inland waterways, this insignificant amount of new construction can only mean the postponement, for the time being, of a large program of necessary replacements of worn out and obsolete vessels. No predictions can be made as to the probable position of the diesel engine in such a program. In the following pages, however, an attempt has been made to show the current position of the American marine diesel engine as power in merchant craft, mostly conversions.

This is the ninth consecutive year in which a similar record has been published in the November issue of MARINE REVIEW. Nine American diesel engine builders are represented in these pages by nine different marine installations. Each installation is uniformly described and illustrated for purposes of ready reference and comparison, one to a page. Included in these installations are: a 3000 horsepower engine for a ferry conversion; two 1000 horsepower engines for generator drive on a dredge.

From these practical illustrations it is evident that the American marine diesel engine is filling a very definite need and has found ready acceptance for a wide variety of merchant craft in many varied services. Due to the extremely limited tonnage of larger tankers and freighters under construction in the United States in recent years, it is difficult to appraise the American diesel engine for these types.

In the meantime it is of interest to consider briefly the position of the diesel engine in world shipbuilding. According to Lloyd's as of Sept. 30, 1934, of the 324,712 gross tons of tankers under construction in the world, 285,112 tons are motor vessels. Of all merchant shipbuilding under way in the world, 58.3 per cent are motorships or 218,000 gross tons more than of all other types. At present in world shipbuilding 764,909 gross tons of motorships are under construction as compared with 546,478 tons of other types.

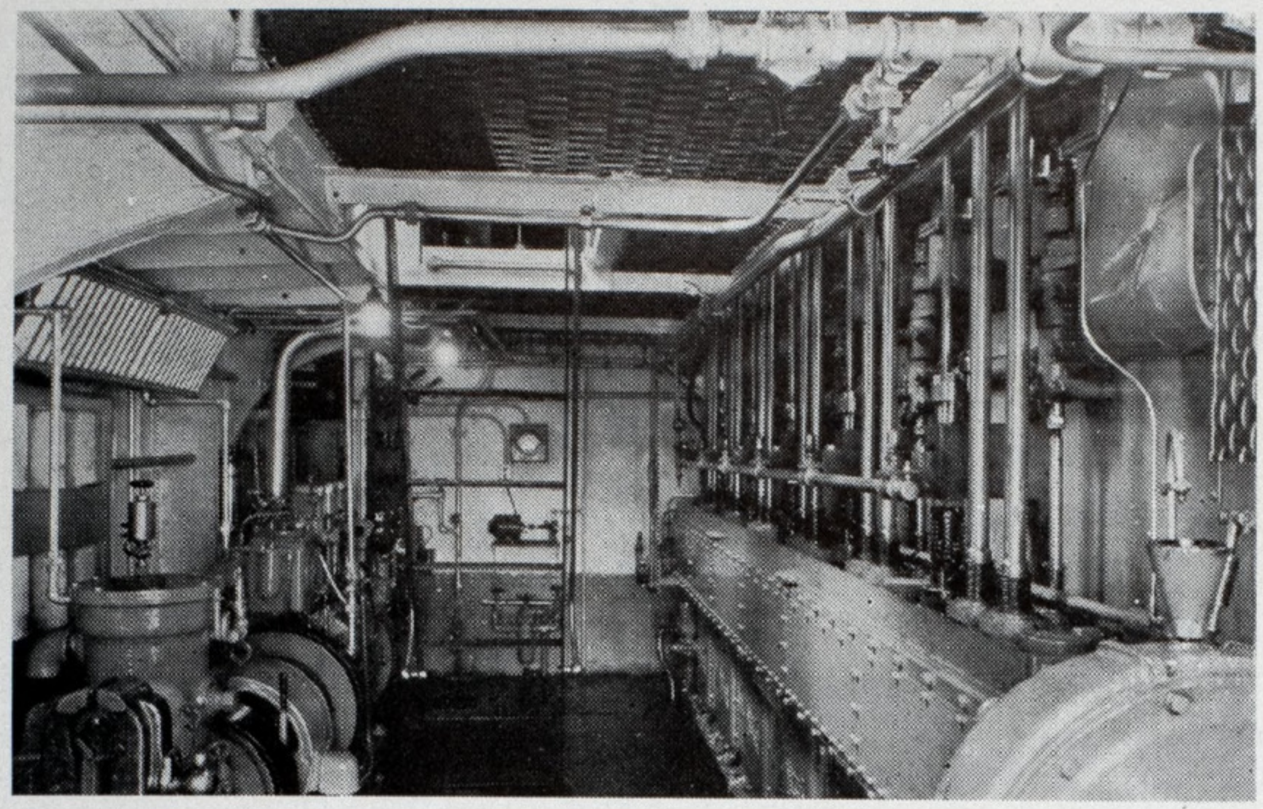
The trend toward motorship construction in Great Britain and Ireland is marked. A year ago about 28 per cent of the ship construction in these countries was in motorships. Now the percentage is 48 per cent. A recent fine example of British motorship construction is the refrigerated cargo liner DURHAM, illustrated on this page. This vessel has a length overall of 513 feet, a beam of 68 feet, 4 inches, and a depth of 47 feet, 2 inches. She has a deadweight of over 13,500 tons and a gross tonnage of 10,900. Two diesel engines with a total of 11,000 brake horsepower at 126 revolutions per minute give her a speed of 16¼ knots.



Twin Screw Motorship DURHAM, *Completed Sept. 25, by Workman Clark Ltd., Belfast, for the Australasian trade*

Diesel Direct Drive in Tug Celtic

One Engine—650 B.H.P.



Engine

Name of Engine—Nelseco; **Year**—1934
Builder—Electric Boat Co.; **Cycle**—4
No. of Cylinders—6; **I.H.P.**—Normal, 688
B.H.P.—Normal, 550; Supercharged, 650
Action—Single; **Injection**—Mechanical (Solid)
Bore—15 in.; **Stroke**—22 in.; **R.P.M.**—250
Piston Speed—920 feet per minute
Pressure Brake—74.7; Supercharged, 88.4
B.H.P. per Cyl.—91.6; Supercharged, 108.3
I.H.P per Cyl.—114.8; **Mech. Eff.**—80%
Wkg. Strokes per Rev.—3; **Stroke to Bore**—1.47
Length O.A.—19 ft. 9½ in.; **Width**—5 ft. 9 in.
Height—8 ft. 4¼ in. above c.l. of shaft
Weight—One engine, 74,840 pounds
Weight per b.h.p.—136 lbs.; **Per i.h.p.**—109 lbs.
Reversing—Direct; Compressor—Independent

Vessel

Name—CELTIC; **Type**—Tug, harbor, barge canal
Owner—Ira S. Bushey & Sons
Builder—Electric Boat Co.; Ira S. Bushey & Sons
Completed—In 1934
Main Drive—Single Screw, diesel direct connected
Length B.P.—78 feet; **Beam**—21 ft. 10 in.
Depth—10 feet; **Draft**—(Max.) 10 feet
No. of Propellers—One; **Fuel Cap.**—2600 bbls.
Speed—11 knots; **Displacement**—220 tons
Fuel Consumption—Lb. per b.h.p. per hr.—0.42
Generators—Two, Electro-Dynamic Co., 10 k.w. each @ 700 r.p.m., One direct connected to Hill diesel. The other driven by V-belts from shaft.

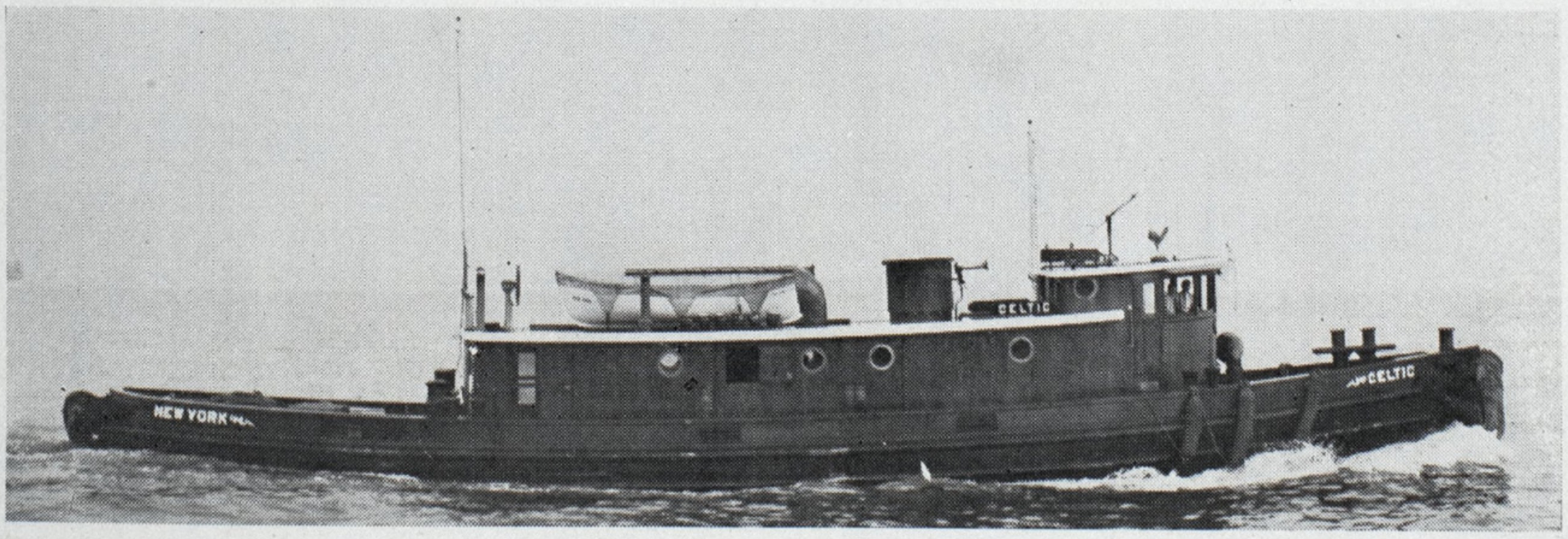
DESCRIPTION

One of the outstanding features of this installation is that, as far as known, it is the first of its kind where supercharging of the diesel engine has been applied either here or abroad. The engine is a four-cycle trunk piston, solid injection type, with individual fuel pumps for each cylinder. Reversing is by a pneumatic hydraulic camshaft shifting mechanism.

Remarks

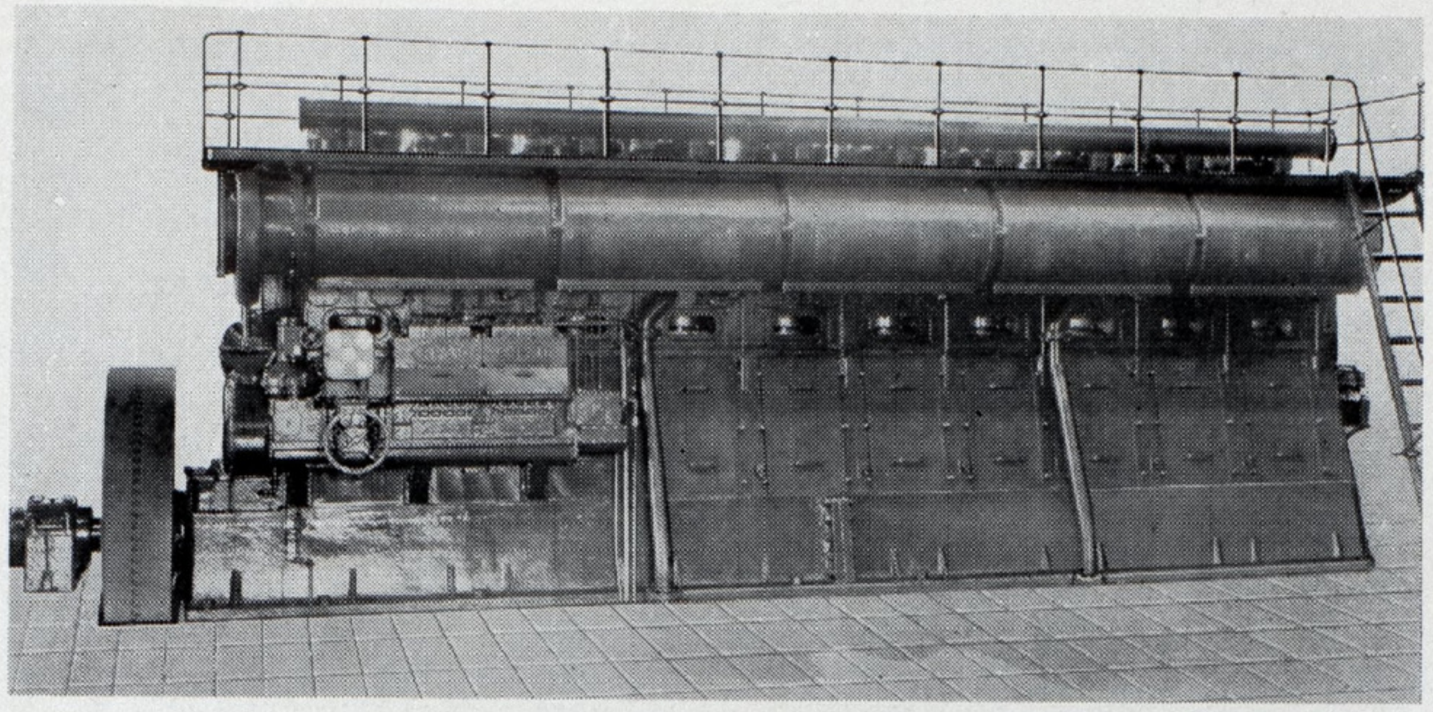
This vessel was designed especially for service on the Hudson river and the New York State Barge canal. Her radius of operation without refueling is two round trips from Perth Amboy, N. J. to Buffalo, a total period of 19 days. The propeller which is direct connected to the main engine is a Columbian bronze wheel, 80 inches in diameter and 62 inches in pitch.

With normal operation of the engine, the revolutions per minute are 200, when supercharged, the revolutions are 220, with pressure of 1 pound, while with 3 pounds the revolutions are increased to 250, the engine developing 650 horsepower. Here is a clear gain of 100 horsepower over the rated power of the engine.



Diesel Drive in Passenger and Automobile Ferry

One Engine—3000 B.H.P.



DESCRIPTION

After rebuilding and conversion to single ended diesel drive, the former steam ferry will have a speed of 17½ knots. She will have a capacity for 115 automobiles and seating capacity for 1500 passengers. The Puget Sound Navigation Co, Seattle, is the owner.

Engine

Name of Engine—Busch-Sulzer; **Year**—1934
Builder—Busch-Sulzer Bros. Diesel Engine Co.
Cycle—2; **No. of Cylinders**—10; **B.H.P.**—3000
Action—Single; **Injection**—A.E.G. Hesselman
Piston Coolg.—Oil; **Scavenging**—Blower
Bore—19½ in.; **Stroke**—27 in.; **R.P.M.**—230
Piston Speed—1035 feet per minute
Pressure Brake—64 pounds per square inch
B.H.P. per Cyl.—300; **Stroke to Bore**—1.385
Wkg. Strokes per Rev.—10; **Mech. Eff.**—85%
Length o.a.—31 feet, 9⅜ inches
Width o.a.—8′ 11½″; **Height o.a.**—13′ 11⅞″
Weight—Main engine, 253,000 lbs.; All machinery 591,000 lbs., exclusive fuel and water
Weight—per b.h.p. (all machinery) 197.1 lbs.
Reversing—Direct; **Air Compressors**—Attached to auxiliary engine, 100 c.f.m. displ., 500 lbs. press., 2-stage, water cooled.

Vessel

Name—Unknown; **Type**—Single-ended ferry
Owner—Puget Sound Navigation Co.
Builder—Moore S.B. & D.D. Co., in 1927; conversion not yet let
Completed—To be completed during 1934
Drive—Single screw diesel, direct connected
Length—256 feet b.p.; **Beam**—56 ft., 6 in. o.a.
Depth—21 feet mld.; **Draft**—12 feet, 6 inches
Propeller—One; **Displ.**—Light, 1526 tons
Speed—17½ knots; **Deadweight**—260 tons
Fuel Capacity—1620 bbls., or 228 long tons
Fuel Consumption—Lb. per b.h.p. per hr.—0.39
Fresh Water—154 tons; **Stores**—18 tons
Generator—One, General Electric, 400 k.w. at 360 r.p.m., Busch Sulzer 4-cycle diesel drive

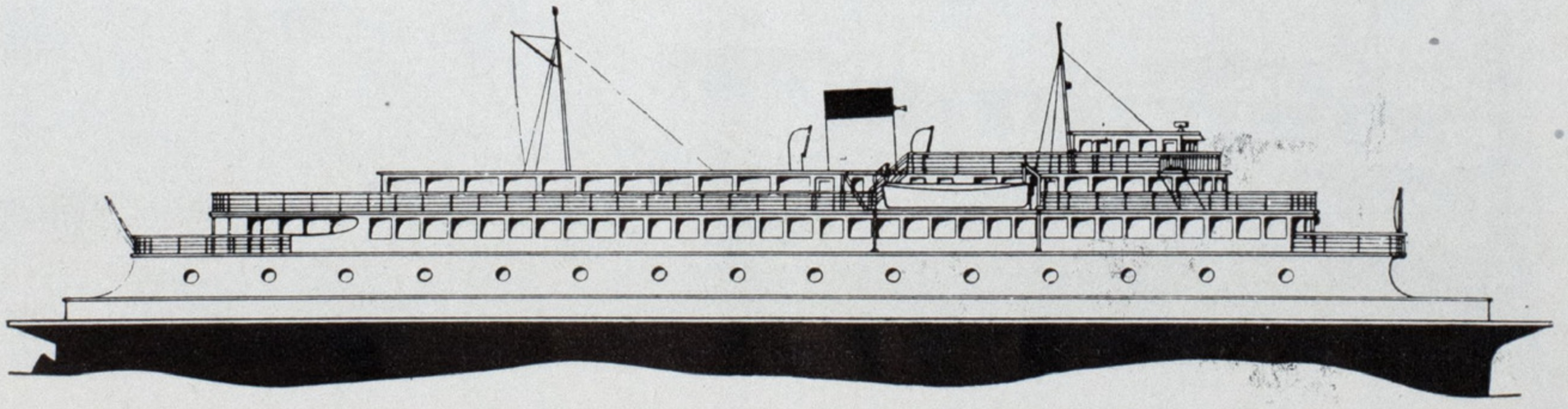
Remarks

The vessel, formerly the PERALTA of the Key System, will have an entirely new arrangement of superstructure. Seating capacity will be provided for 1500 passengers on the upper deck. Beam overall will be reduced from 70 feet to 56 feet, 6 inches which allows three lanes of cars on either side of engine room casing, or a total when fully loaded of 115 automobiles.

Diesel direct drive was selected because (1) it made possible the desired speed increase to 17½ knots; (2) it gave the highest possible operating economy; and (3) it allowed the simplest machinery installation.

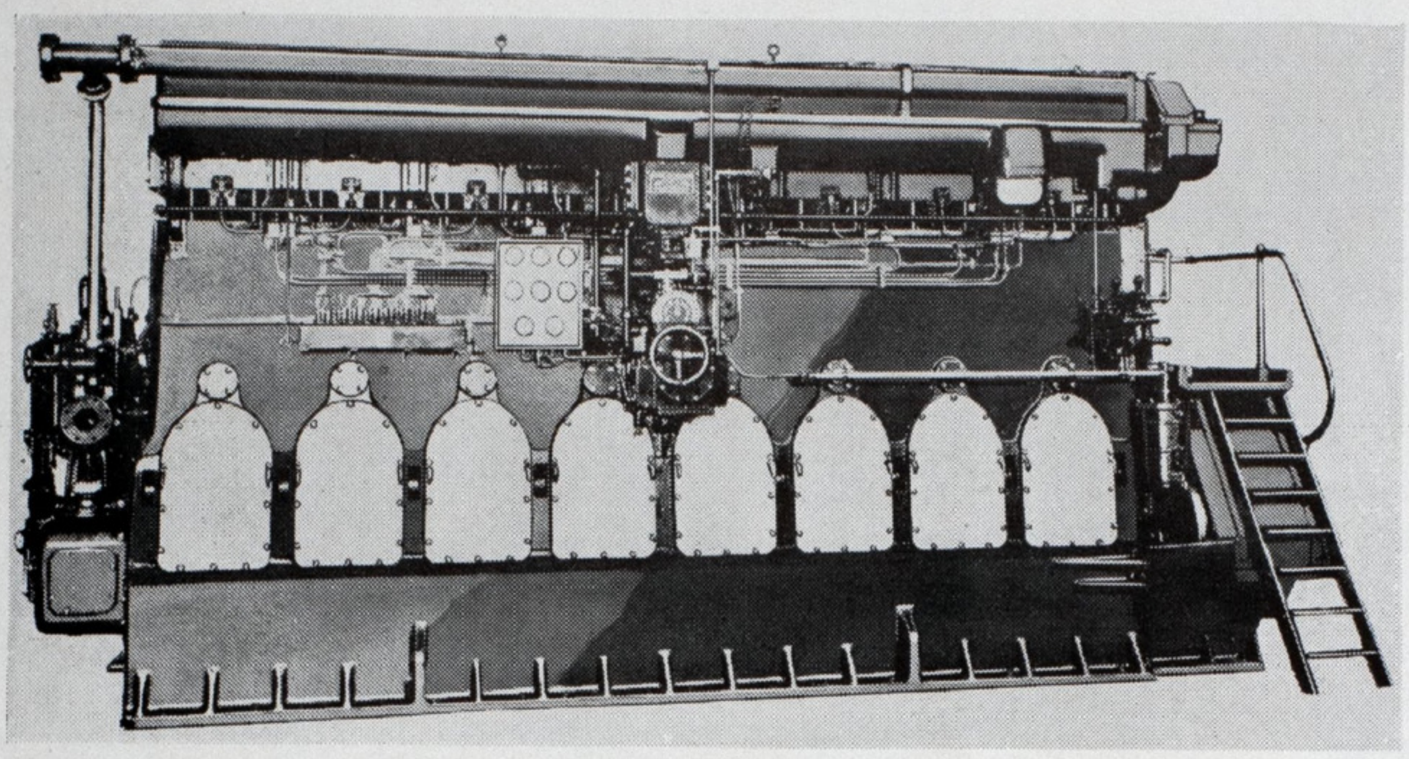
The main engine for this vessel, now completed, is of the Busch-Sulzer standard two-cycle trunk piston design which gives maximum reliability with comparatively light weight and small space requirements. It is similar to the main engine in the diesel ferry CHIPPEWA and numerous other Busch-Sulzer stationary and marine installations.

The outstanding features of the design of this engine are: Patent wrist pin construction giving full length bearing; sludge chamber design, so that crankcase oil is wiped off and returned to the sump while contaminated oil on the working part of the piston is scraped off and carried to a separate tank. About three-quarters of the length of the piston is visible while the engine is in operation. Engines of this design are now offered in units up to 10,000 horsepower.



Diesel Generator Drive in Dredge Norfolk

Two Engines—Each 1000 B.H.P.



DESCRIPTION

Two diesel engines of the type illustrated and described, each of 1000 brake horsepower, direct connected, to a 700 kilowatt-generator at 277 revolutions per minute, furnish electric power for operating all of the machinery on the hydraulic dredge NORFOLK.

Engine

Name of Engine—Ingersoll-Rand; **Year**—1934
Builder—Ingersoll-Rand Co.; **Cycle**—4
No. of Cylinders—8; **B.H.P.**—1000
Action—Single Acting; **Injection**—Solid, direct
Bore—16 in.; **Stroke**—24 inches; **R.P.M.**—275
Piston Speed—1100 feet per minute
Pressure Brake—74.8 lbs.; **B.H.P. per Cyl.**—125
Mech. Eff.—82%; **Wkg. Strokes per Rev.**—4
Length—29′ 4″; **Height**—11′ 8″; **Width**—6′ 6″
Weight—110,000 lbs.; **Reversing**—Non-reversing
Weight—Pounds per brake horsepower—110
Generators—Each engine is direct connected to an electric generator of 700 k.w., supplied by Elliott Co. Generators operate @ 277 r.p.m.

Vessel

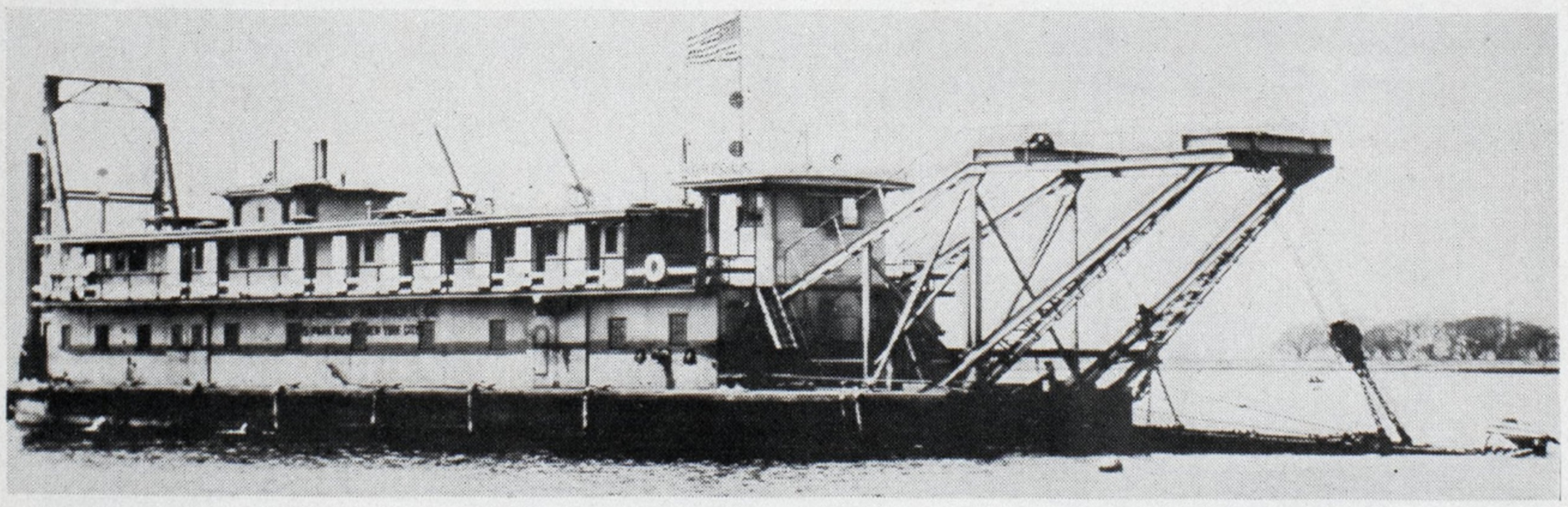
Name—NORFOLK; **Type**—Hydraulic dredge
Owner—Atlantic, Gulf & Pacific Co.
Builder—Newport News S.B. & D.D. Co.
Completed—Engine installation, March, 1934
Length B.P.—162 feet; **Beam**—38 feet
Depth—14 feet; **Draft**—9 feet, 2 inches
Power—For machinery only, non-propelled
Displacement—1441 tons; **Fuel Cap.**—20,150 gal.
Fuel Consumption—Lb. per b.h.p. per hr.—0.41
Operation without Refueling—Six days

Remarks

This engine combines the simplicity and efficiency of the builder's system of solid injection, which by the use of a single fuel injection pump and distributor has made equal cylinder loading possible, with the latest improved mechanical details. A number of engines of this type have been in service two to three years and have demonstrated their high efficiency and freedom from mechanical difficulties.

Pistons are of the trunk type with long skirt. They are made of hard gray iron, heat treated, and then machined and finished to dimensions by grinding. The piston pins are forged of steel, hardened, machined, and finished to dimensions by grinding. Cylinder heads are of cast iron. The intake exhaust valves are of poppet type, spring closed, and mechanically opened. Connecting rods are forged of open-hearth steel with a solid eye in the piston pin end.

The fuel injection system consists essentially of two spray nozzles diametrically opposed, but inclined slightly downward and projecting slightly into the combustion chamber. A single injection pump attached to the camshaft housing at the flywheel end serves all the working cylinders.

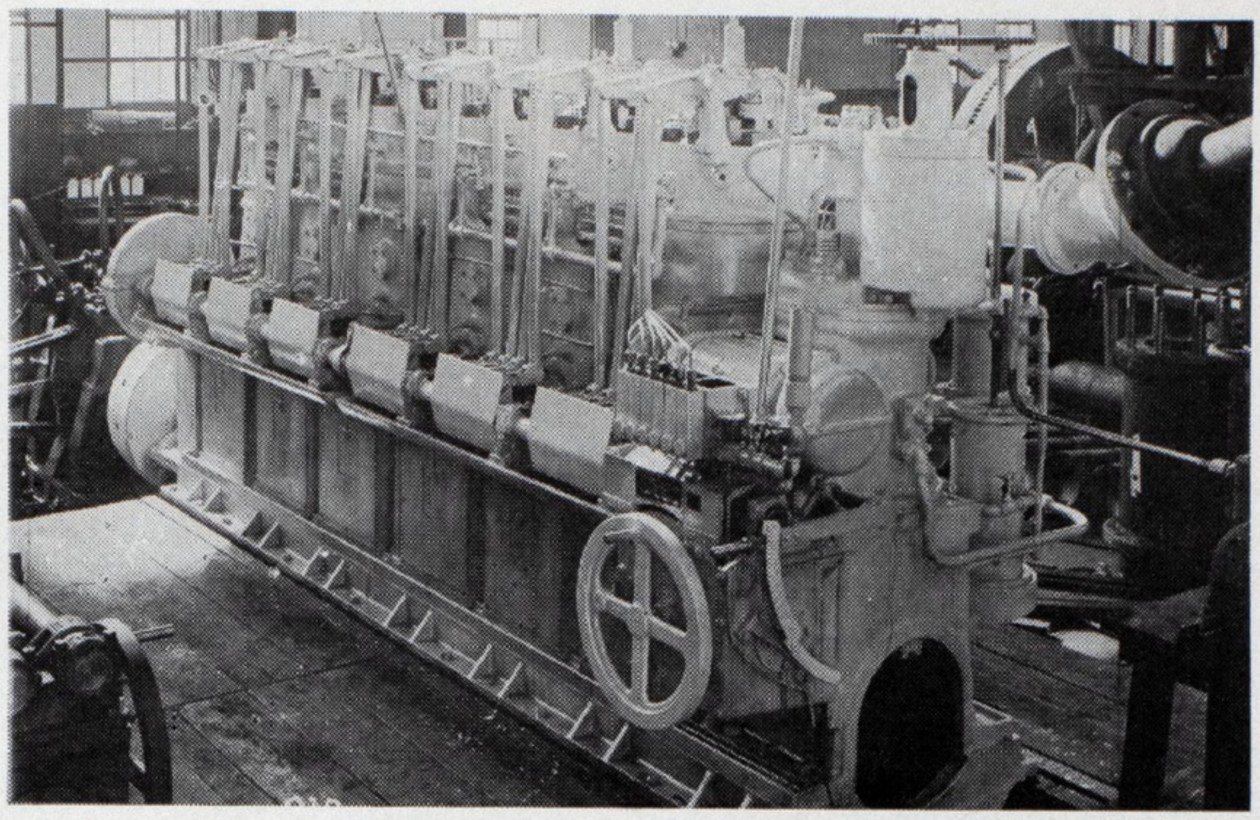


Diesel Drive in Tanker Poughkeepsie Socony

Two Engines—Each 375 B.H.P.

DESCRIPTION

Three tankers, for the New York State Barge canal Great Lakes and Atlantic coast trades of the Standard Vacuum Transportation Co., each fitted with two diesel engines of the type illustrated and described, were completed during the past summer. They are the NEW HAVEN SOCONY, PLATTSBURGH SOCONY, and POUGHKEEPSIE SOCONY.



Engine

Name—McIntosh & Seymour; **Year**—1934
Builder—McIntosh & Seymour Corp.; **Cycle**—4
Cyls.—6; **B.H.P.**—375; **I.H.P.**—500
Action—Single acting; **Injection**—Air
Bore—13 in.; **Stroke**—18 inches; **R.P.M.**—300
Piston Speed—900 feet per minute
B.H.P. per Cyl.—62½; **I.H.P. per Cyl.**—83.4
Mech. Eff.—75%; Wkg. **Strokes per Rev.**—3
Length—22′ 2″; **Height**—8′ 10″; **Width**—4′ 2″
Weight—71,000 pounds; **Reversing**—Direct
Weight—Pounds per brake horsepower—190
Air Compressor—Attached, three stage

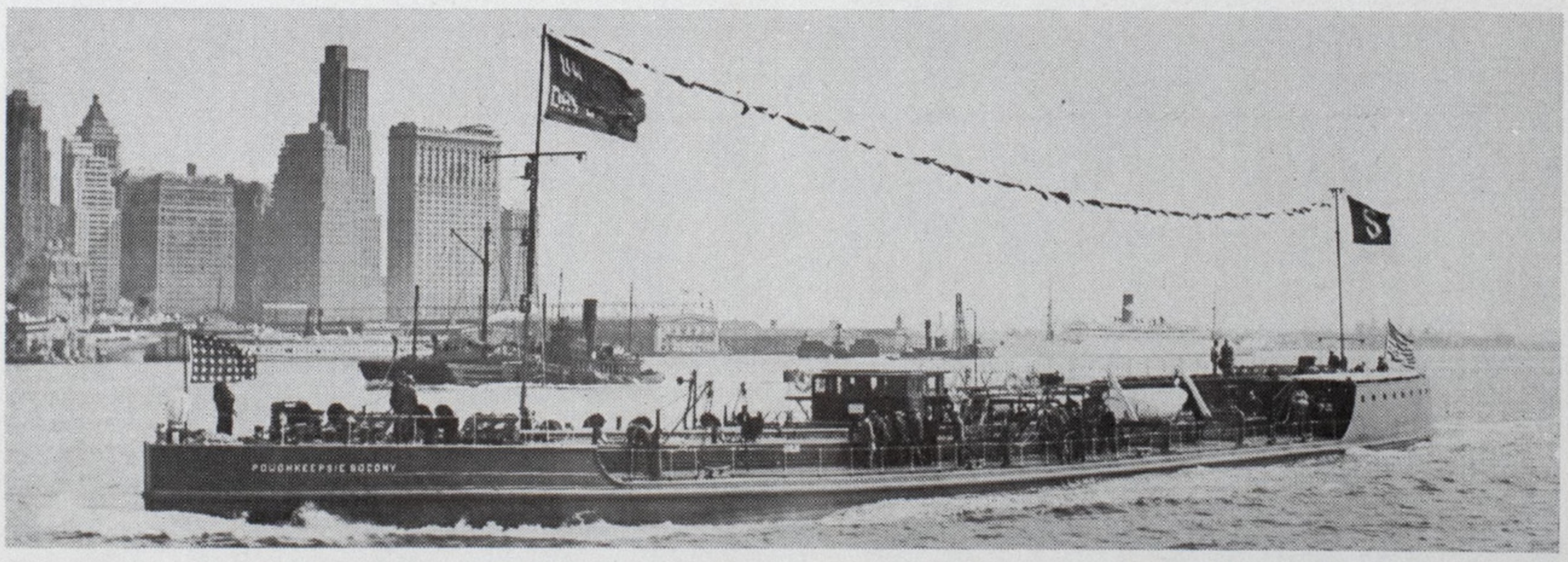
Vessel

Name—POUGHKEEPSIE SOCONY; also sister vessels, NEW HAVEN SOCONY and PLATTSBURGH SOCONY
Type—Tanker, for inland, coastwise, lakes
Owner—Standard Vacuum Transportation Co.
Builder—United Dry Docks Inc.
Completed—POUGHKEEPSIE SOCONY, Aug. 29, 1934
Main Drive—Twin screw, diesel direct
Length O.A.—260 feet; **Beam**—40 feet mld.
Depth—14 feet mld.; **Draft**—12 feet
Speed—10 knots; **Number of propellers**—Two
Fuel Capacity—300 gals.; **Radius**—3000 miles
Generators—Two, Diehl Mfg. Co., 60 k.w. @ 450 r.p.m., each driven by McIntosh & Seymour 95 b.h.p., four cycle, solid injection diesel engine.

Remarks

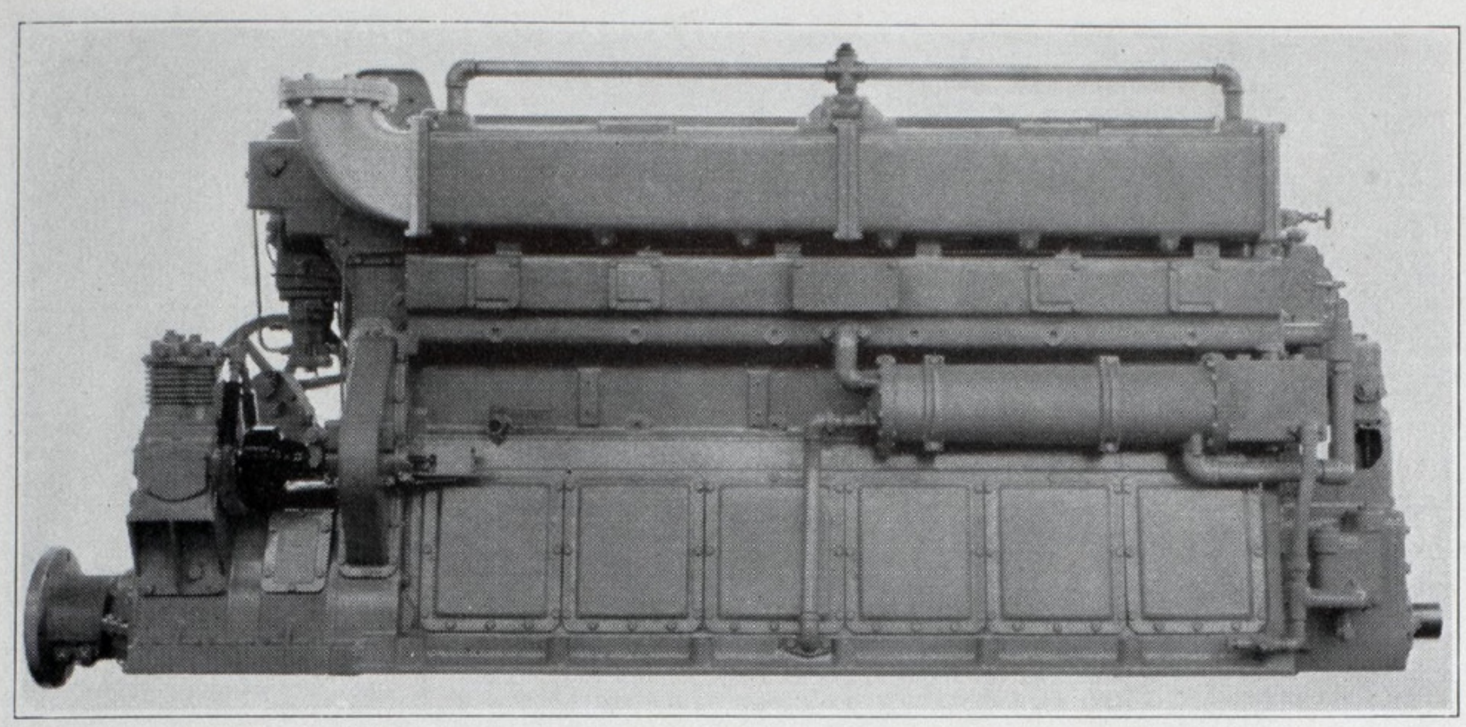
These three tankers are typical Standard Vacuum Transportation Co. "canal" bulk oil carriers of 1242 gross tons and 13,500 barrels cargo capacity. They are substantially similar to the canal-Great Lakes tankers first developed by this company in the 1923 building program. There is, however, one important difference the POUGHKEEPSIE SOCONY, last of the three to be completed, is of all-welded construction, which is, for so large a vessel, a real innovation. This type of construction saved 50 tons of deadweight.

N. J. Pluymert, naval architect for the Standard Vacuum Transportation Co., is responsible for the design of these vessels. A complete illustrated article describing the POUGHKEEPSIE SOCONY was published in the September issue of MARINE REVIEW.



Diesel Drive in Trawler Edith L. Boudreau

One Engine—230 B.H.P.



Engine

Name of Engine—Cooper-Bessemer; **Year**—1934
Builder—The Cooper-Bessemer Corp.; Cycle—4
No. of Cyls.—6; **B.H.P.**—230; **I.H.P.**—270
Action—Single acting; **Injection**—Solid, direct
Bore—10½ in.; **Stroke**—13½ in.; **R.P.M.**—300
Piston Speed—675 feet per minute
Pressure Brake—85 lbs.; **B.H.P. per Cyl.**—38
Mech. Eff.—85%; **Wkg Strokes per Rev.**—3
Length—12′ 4″; **Height**—6′ 10″; **Width**—3′ 5″
Weight—27,500 lbs.; **Reversing**—Direct
Weight—Pounds per brake horsepower—120
Air Compressor—Attached, built-in

Vessel

Name—Edith L. Boudreau; **Type**—Beam trawler
Owner—Capt. Joseph Boudreau
Builder—Arthur D. Storey, Essex, Mass.
Completed—Originally built in 1930
Main Drive—Single Screw, diesel direct
Length B.P.—85′ 4″; **Beam**—21′ 5″;
Depth—10 ft. 6 in.; **Draft**—11 feet
Speed—10 knots; **Number of propellers**—One
Fuel Capacity—4000 gals.; **Fuel per Hr.**—12 gals.
Fuel Consumption—Lb. per b.h.p. per hr.—0.42

DESCRIPTION

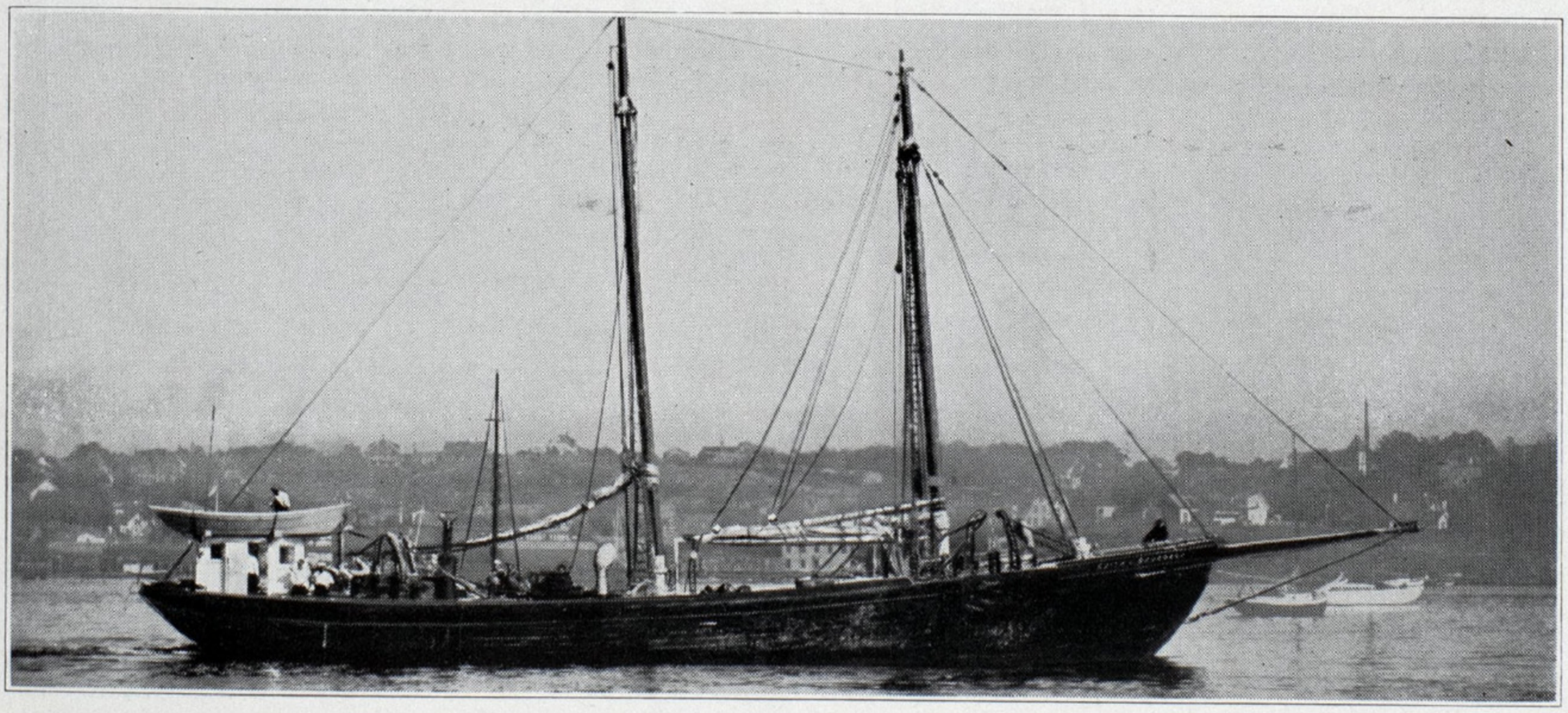
This wooden hull schooner was converted into a beam trawling vessel by the installation of the diesel engine illustrated and described. This engine is direct connected to a single propeller and gives the trawler a maximum speed of 10 knots in service.

Remarks

The Cooper-Bessemer model GN four-cycle, direct reversible, full diesel oil engine of the type installed in the Edith L. Boudreau is available in six and eight cylinder units for all types of marine service. This type of engine operates at from 300 to 600 revolutions per minute.

This engine incorporates the best and latest modern improvements in diesel engine design including the company's patented atmospheric relief fuel injection system. The engine is compact, of comparatively light weight, and yet of rugged construction suitable for heavy duty marine service.

The power requirements of a beam trawler are severe. The owner of the vessel and the chief engineer are both well satisfied with her operation. The vessel operates in the fishing trade out of Gloucester, Mass.

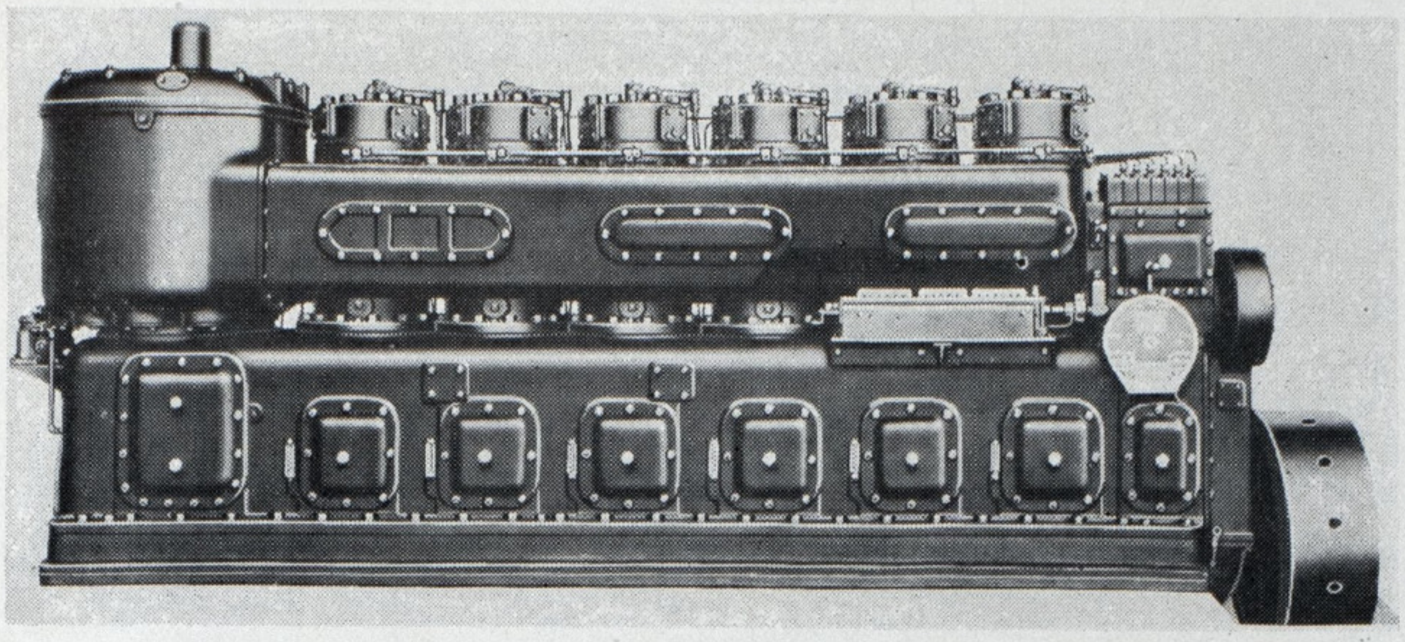


Diesel Direct Drive in Freighter Blue Cross

Two Engines—Each 500 B.H.P.

DESCRIPTION

Two five cylinder diesel engines, each of 500 horsepower, of the type described and illustrated are installed, one port and one starboard, in the grain carrier BLUE CROSS and sister vessel BLUE RIVER. Each engine drives a 68-inch propeller @ 400 r.p.m.



Engine

Name of Engine—Fairbanks-Morse; **Year**—1933
Builder—Fairbanks, Morse & Co.; **Cycle**—Two
No. of Cyls.—5; B.H.P.—500; **Action**—Single
Injection—Solid, airless; **Scavenging**—Pump
Piston Coolg.—Oil; **Bore**—12 in.; **Stroke**—15 in.
R.P.M.—400; **Piston Speed**—1000 ft. per minute
B.H.P. per Cyl.—100; **Stroke to Bore**—1.25
Mean Effective Pressure—58.4 pounds
Working Strokes per Revolution—5
Length O. A.—17 ft. 1 in.; **Width**—6 ft. 4¼ in.
Height—7 feet, 1⅜ inches above c.l. crankshaft
Weight—One engine, 56,900 lbs. (with flywheel)
Weight—Pounds per brake horsepower—114
Reversing—Direct; **Air Compressor**—27 c.f.m.

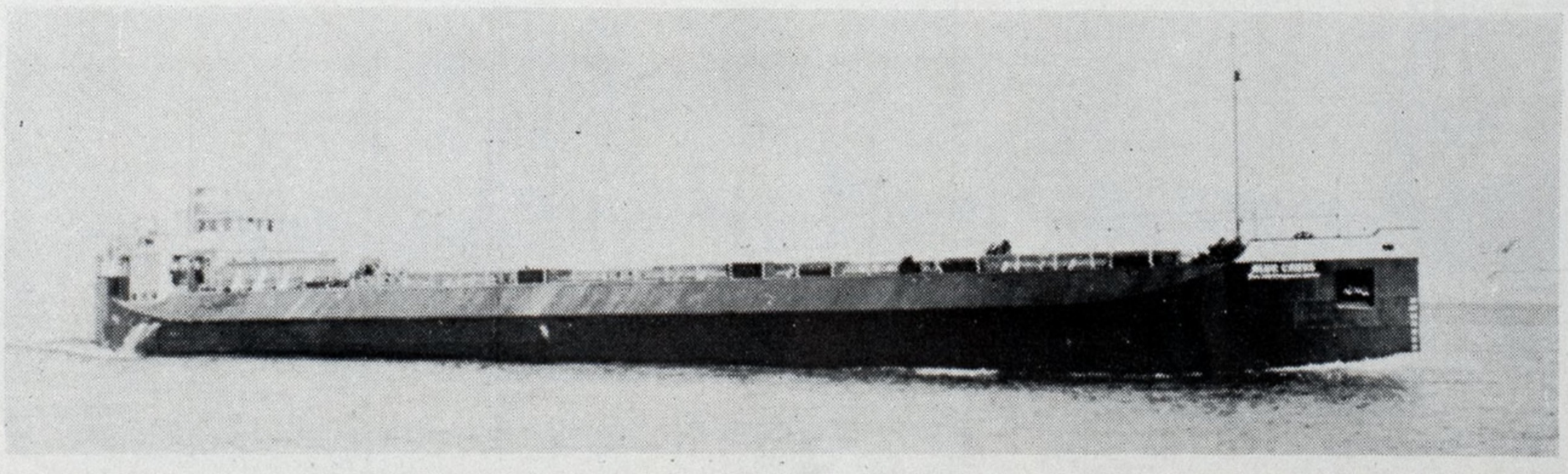
Vessel

Name—BLUE CROSS; sistership—BLUE RIVER
Type—Grain carrier, upper lakes to Montreal
Owner—Blue Line Motorships Ltd., Toronto
Builder—Muir Bros. D. D. Co., Port Dalhousie
Completed—July, 1934 (reconditioned)
Main Drive—Twin Screw, diesel direct connected
Length B. P.—256 feet; **Beam**—42 feet, 6 inches
Depth—19 feet, 6 inches; **Draft**—15 ft. (loaded)
Speed—8.5 knots; **No. of Propellers**—Two
Fuel Cap.—10,000 gals.; **Radius**—1500 miles
Fuel Consumption—Lb. per b.h.p. per hr.—0.42
Five tons of fuel per 24 hours
Generator—One, 5 k.w., 1200 r.p.m., diesel
Cargo Capacity—120,000 bu. in 4 compartments

Remarks

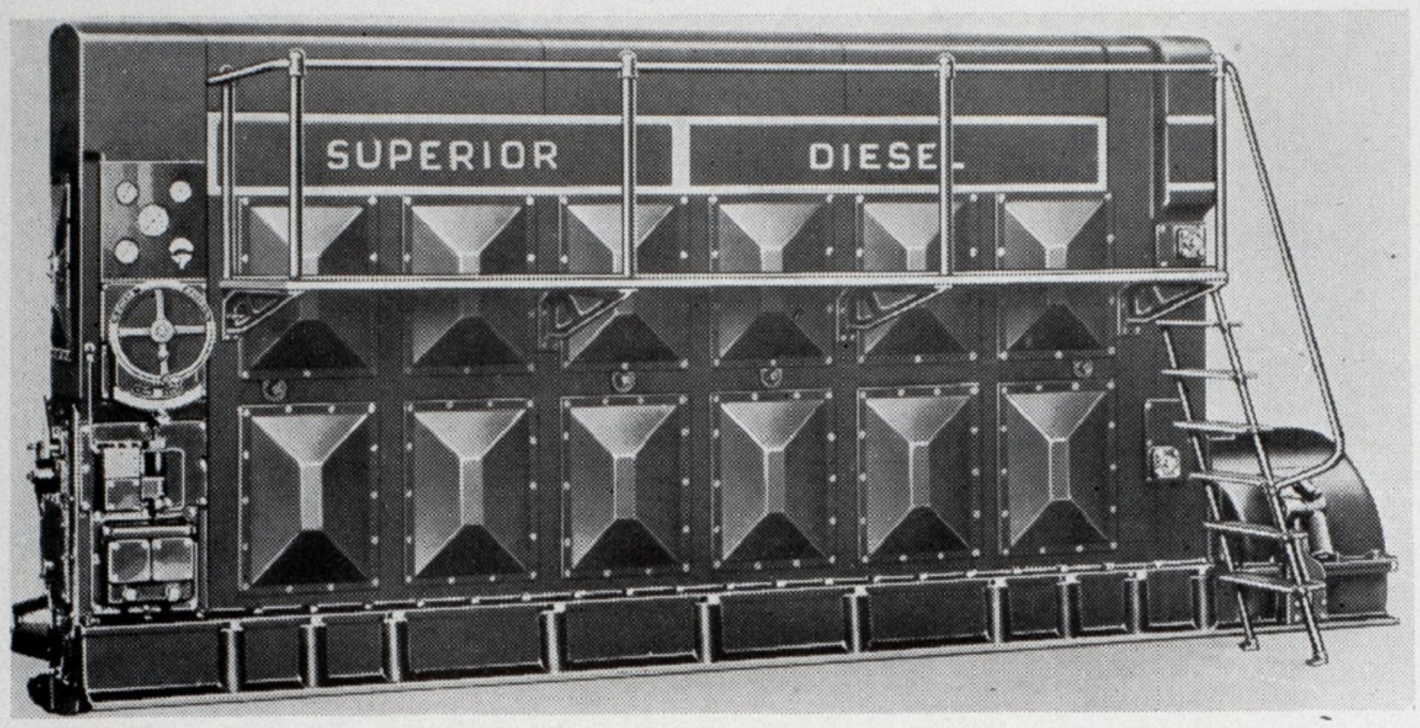
The sisterships BLUE CROSS and BLUE RIVER, recently reconditioned and fitted with diesel power for the Blue Line Motorships Ltd., Toronto, Ont., are designed for transporting grain between Lake Superior ports and Montreal. They are of all steel construction with seven watertight compartments, consisting of forward and after peaks, engine room and four cargo holds which permit of loading four different kinds of grain.

The bridge, located aft, with the officers' and crew's quarters, is unusual for this service and has proved effective for accurate maneuvering in limited space. In regular service the vessel traverses not only the open lakes but also canals, locks, and rivers and even gets into salt water in the vicinity of Montreal. The vessels are classed in Lloyd's.



Diesel Geared Drive in Tug Syosset

One Engine—420 B.H.P.



DESCRIPTION

This vessel is a converted steam tug and is being fitted with one diesel engine of the type described and illustrated. The engine is connected to a reduction gear giving a propeller speed of 100 r.p.m. The propeller is 9 feet in diameter and 11 feet. 6 inches in pitch.

Engine

Name of Engine—Superior; **Year**—1934
Builder—The National-Superior Co.; **Cycle**—4
No. of Cylinders—6; **B.H.P.**—420; **R.P.M.**—300
Action—Single; **Injection**—Mechanical (Solid)
Bore—14 in.; **Stroke**—16 in.; **Piston Speed**—800 f.p.m.
Length—19 ft. 1¾ in.; **Width**—4 feet, ¾-inch
Height—Base to top of engine, 7 feet, 9¾ in.
Weight—one engine, 50,000 pounds
Weight—Pounds per brake horsepower—119
Reversing—Air; **Air Compressor**—Independent

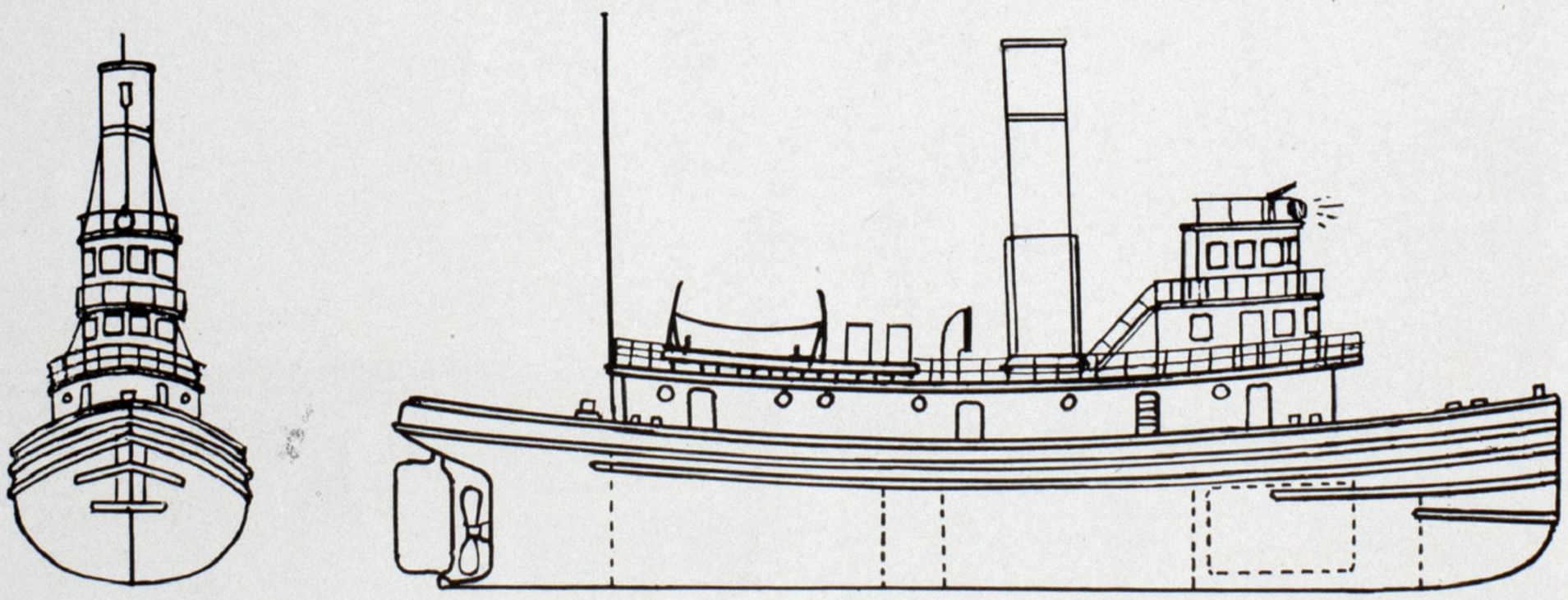
Vessel

Name—Syosset; **Type**—Harbor tug
Owner—Townsend Petroleum Transportation Co.
Main Drive—Single screw, diesel engine, connected to Farrel-Birmingham reduction gear. Engine revolutions of 300 reduced to 100 revolutions per minute of the propeller.
Length B. P.—112 feet; **Beam**—23 feet
Depth—11 feet, 9 inches; **Draft**—12 ft., extreme
Speed—9.5 knots; **Gross Tons**—176
Fuel Capacity—7400 gals.; **Radius**—3000 miles
Fuel Consumption—Lb. per b.h.p. per hr.—0.40

Remarks

By the use of a reduction gear through which the engine speed of 300 r.p.m. is stepped down to a propeller speed of 100 r.p.m., the weight of the installation and the cost, for effective horsepower at the propeller, is very materially reduced over the usual direct connected method. Another important feature is the greater propeller efficiency at 100 revolutions per minute over that where the propeller revolutions must correspond to the much higher revolutions of the engine. In other words, a lighter weight engine operating at the higher revolutions necessary for maximum efficiency is thus combined with a comparatively low speed efficient propeller.

The engine is the builder's standard embloc design, including steel through bolts from the under side of each bearing to the top of the cylinder block, and dual intake and exhaust valves giving cool valve operation, less valve movement, and quieter operation.

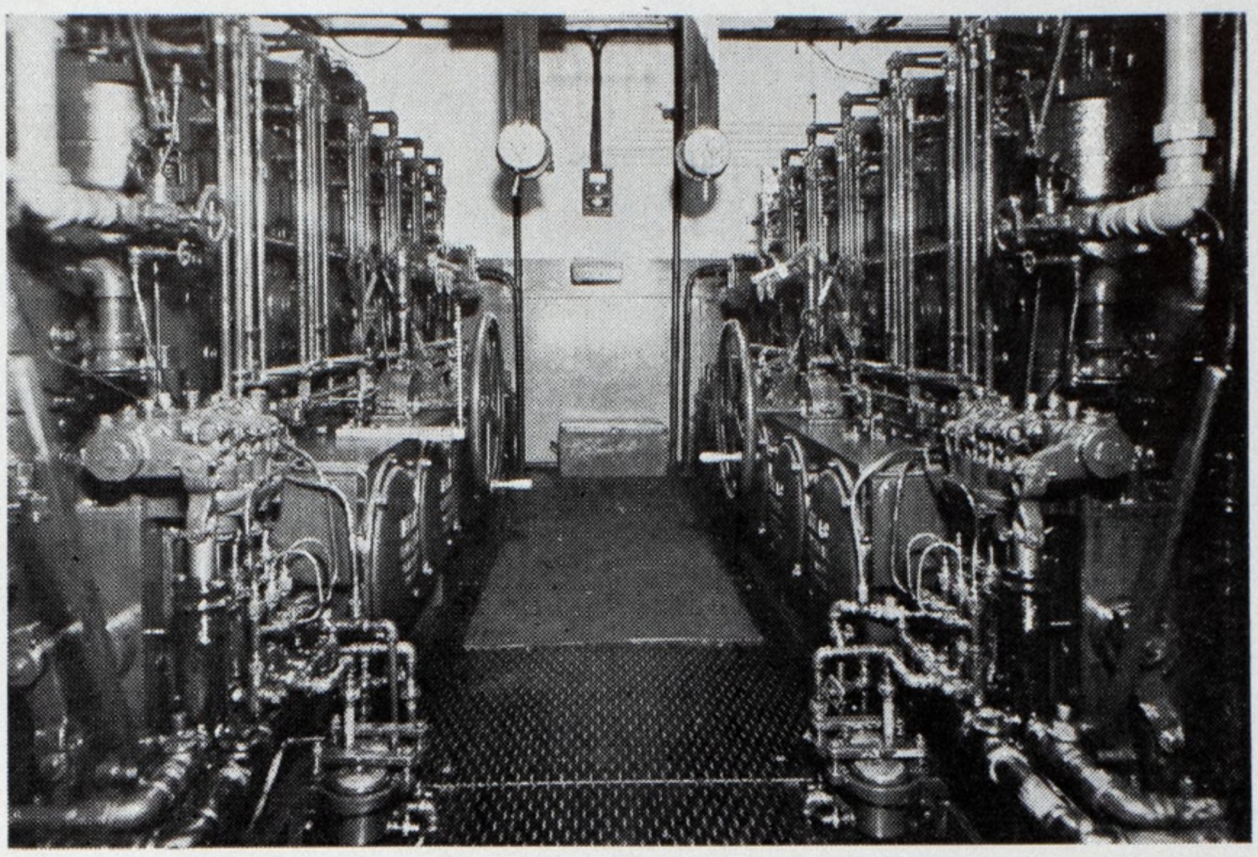


Diesel Direct Drive in Freighter Ranger

Two Engines—Each 200 B.H.P.

DESCRIPTION

The RANGER was converted to a diesel freighter by the installation of two engines of the type illustrated and described, and is now engaged in general cargo trade out of Jacksonville, Fla., to Cuba, Nassau and Baracoa. The accompanying illustration shows the engine room of the RANGER.



Engine

Name of Engine—Atlas Imperial; **Year**—1934
Builder—Atlas Imperial Diesel Engine Co.
Cycle—4; **No. of Cylinders**—6; **B.H.P.**—200
R.P.M.—325; **Action**—Single; **Injection**—Solid
Bore—10″; **Stroke**—13″; **Piston Spd.**—705 f.p.m.
Mean Effective Pressure—79 lbs. per sq. in.
B.H.P. per Cyl.—33.33; **Stroke to Bore**—1.33
Working Strokes per Revolution—3
Length—13′ 7″; **Height**—8′; **Width**—3′ 2″
Weight—1 engine, 22,270 lbs.; **Revers.**—Direct
Air Compressor—Attached, for starting air

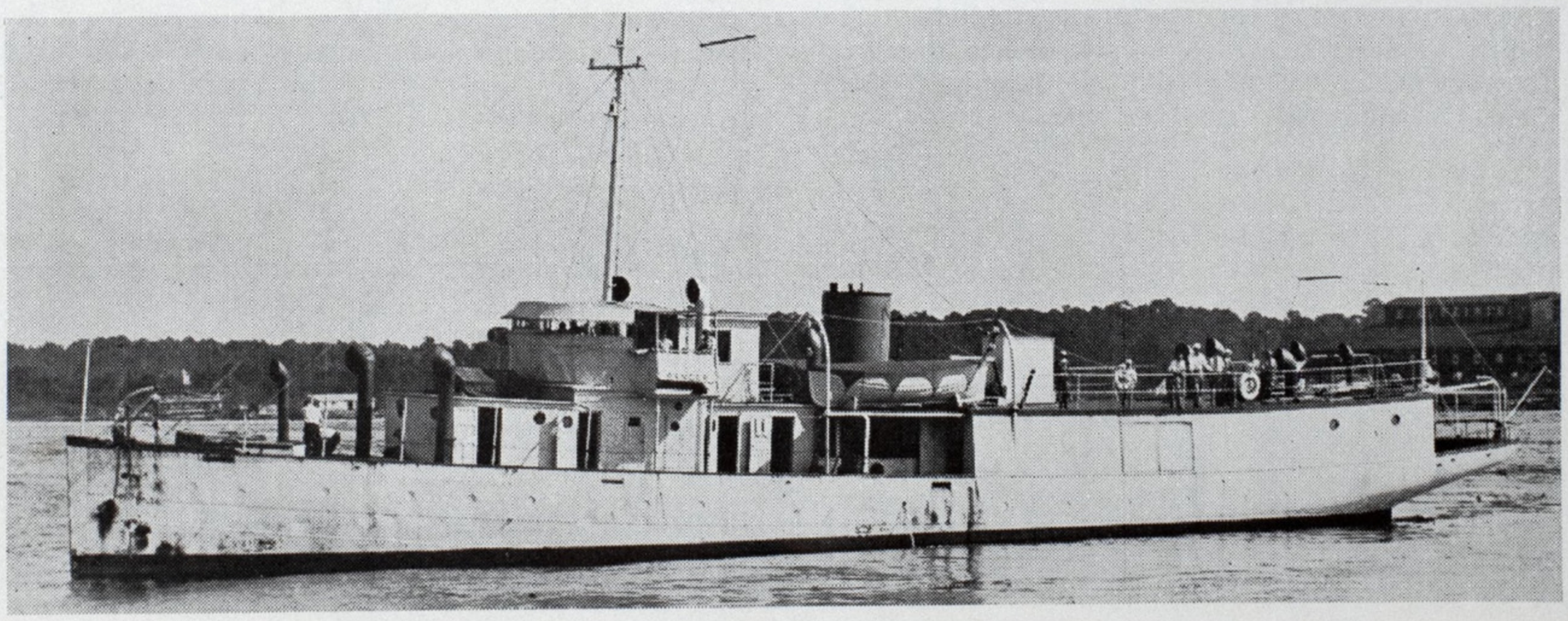
Vessel

Name—RANGER; **Type**—Converted yacht
Owner—Suwanee Steamship Co., Jacksonville
Builder—Rebuilt, Charleston D. D. & Mach. Co.
Completed—Conversion completed June, 1934
Main Drive—Twin screw, diesel direct connected
Length B.P.—149 ft. 6 in.; **Beam**—22 feet
Speed—15 knots; **No. of Propellers**—two
Fuel Consumption—Lb. per b.h.p. per hr.—0.45
Generator—One Engberg, three k.w., driven by 4 cyl. 10 h.p., Novo engine

Remarks

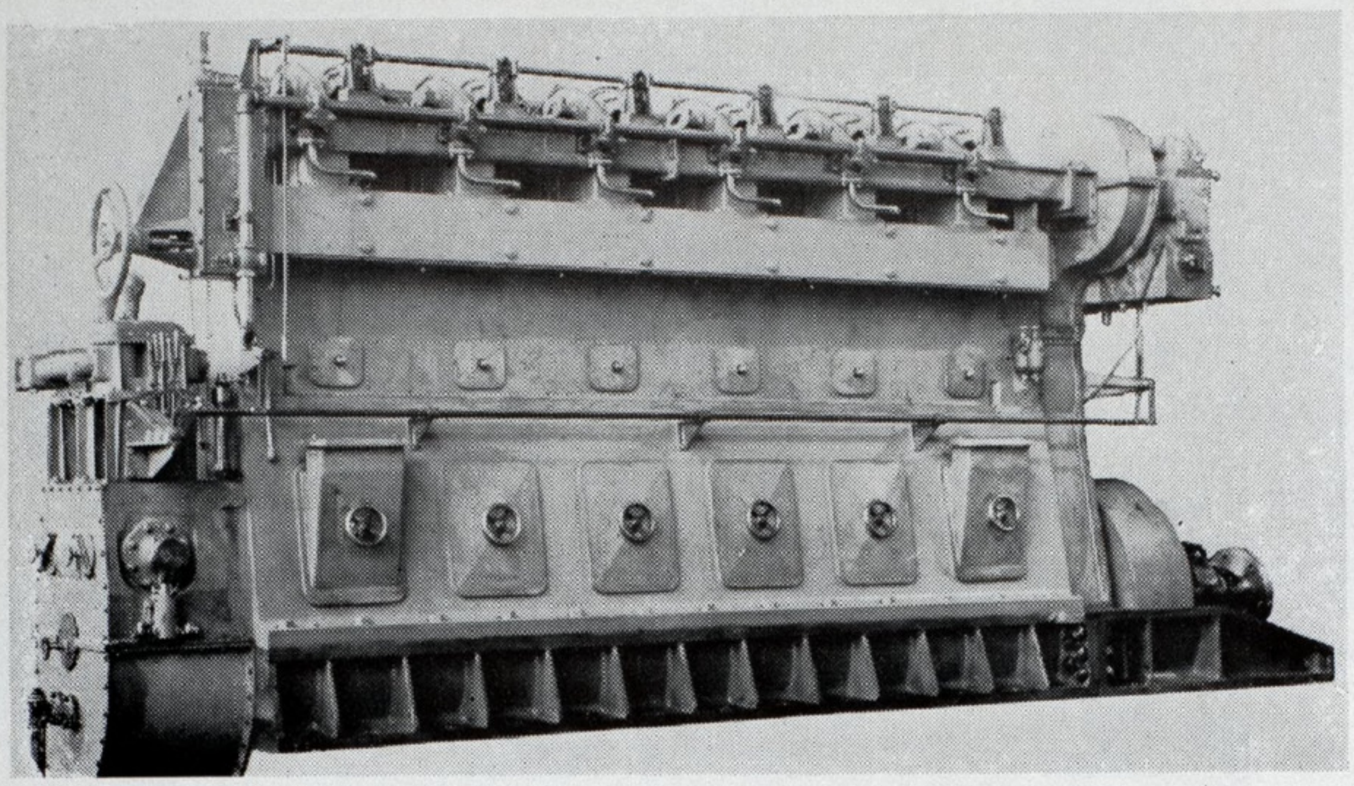
The RANGER, originally built in 1910 as a private yacht, after a varied history, was bought in 1933 for the Suwanee Steamship Co., Jacksonville.

Plans for converting the RANGER for general cargo trade were prepared by L. L. Green Jr., Charleston, S. C., naval architect. Work of removing the old steam equipment and installation of the new diesel engines was carried out at the plant of the Charleston Dry Dock & Machine Co., Charleston, S. C. The vessel was fitted with a new after deck house and with ventilators to make her suitable for service in the banana trade. She can carry from 8000 to 9000 stems of bananas.



Diesel Direct Drive in Towboat Wm. T. Warner

One Engine—600 B.H.P.



DESCRIPTION

A diesel engine of the type illustrated and described, of 600 b.h.p., direct connected to a three-blade, 78 inches diameter, by 66 inches pitch, steel propeller, @ 250 r.p.m., supplies the main power in this towboat. The vessel operates on the northern end of the waterway from the Great Lakes to the Gulf of Mexico.

Engine

Name of Engine—Winton: **Year**—1933
Builder—Winton Engine Corp.; **Cycle**—4
No. of Cylinders—6; **Brake Horsepower**—600
Action—Single; **Injection**—Solid (airless)
R.P.M.—250; **Bore**—15½ inches; **Stroke**—22 in
B.H.P. per Cyl.—100; **Stroke to Bore**—1.42
Piston Speed—916 feet per minute
Length O.A.—24 ft. 1⅝ in.; **Width**—4 ft. 10 in.
Height—Base to top of engine—10 ft. 5⅛ in.
Weight—One engine complete, 93,500 pounds
Weight—Pounds per b.h.p., one engine, 155.8
Reversing—Direct; **Air Compressor**—Attached

Vessel

Name—Wm. T. Warner; **Type**—River towboat
Owner—Wolf River Transportation Co., Memphis
Builder—Wolf River Transportation Co.
Charterer—Inland Waterways Corp.
Completed—May, 1933
Main Drive—Single screw, diesel direct connected
Length—99 feet, 6 inches; **Beam Molded**—17 feet
Depth—7 feet; **Draft**—5 feet, 6 inches
Fuel Capacity—Diesel fuel oil, gallons—10,600
Fuel Consumption—Lb. per b.h.p. per hr.—0.42

Generator—One, 10 k.w.@ 1000 r.p.m. Ideal Electric Co. with Winton diesel drive

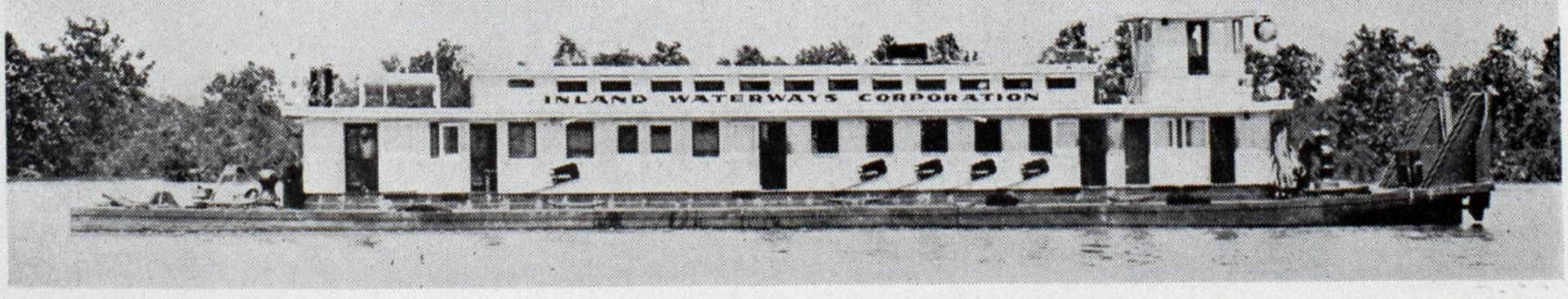
Remarks

Upon completion the towboat Wm. T. Warner was chartered by Major General T. Q. Ashburn, president of the Inland Waterways Corp., for service in the upper Illinois and Chicago rivers In service she has amply demonstrated that her design, construction, diesel engine main propelling drive and equipment are suitable for the work to be done. Her regular run is from Chicago to Ottawa, Ill., but a number of times this has been extended to Peoria and Havana, Ill.

The Warner holds the distinction of having delivered at Chicago the first Inland Waterways Corp. tow via the then newly completed Lakes-to-Gulf waterway last year.

Over a period of 195 days from June 2 to Dec. 13, 1933 inclusive she made 110 trips totaling 11,480 miles. During this time she towed 246 barges and was under way for 1982 hours.

Sometime in August, 1934 the Warner delivered at Chicago four 135-foot barges and one 300-foot barge loaded with cargo from New Orleans, the largest tow up to that time to traverse the Illinois waterway.



SITE for the permanent shore headquarters of the New York State Merchant Marine Academy on Fort Schuyler reservation, Throggs Neck New York at the entrance to Eastchester bay from the East river. This property was relinquished to the state of New York by the War department

SHORE HEADQUARTERS

New York Merchant Marine Academy

BY R. D. Mac MILLEN

THE U. S. S. EMPIRE STATE, training ship of the New York State Merchant Marine academy, returned on Aug. 29 to her berth at the New York navy yard from the fifty-ninth annual cruise to Bermuda and European waters with a student corps of 154 cadets aboard, under command of the superintendent, Capt. James H. Tomb, U. S. N. retired. The vessel will remain on her former station at the navy yard until completion of the new shore base at Fort Schuyler, New York harbor. Work of reconditioning the frame buildings surrounding the old fort, to be used as temporary housing is proceeding energetically under T.E.R.A. auspices. Plans have been prepared, and now are being considered, for remodeling and renovating the interior of the massive stone fort, for use as permanent dormitories class rooms, laboratories, shops, etc.

Shore Base Needed

A suitable shore base for the academy, which maritime interests and alumni for years have urged as a necessity, came within reach last March when Herbert H. Lehman, governor of New York, announced that 20 acres at the seaward (or eastern) end of the Fort Schuyler reservation, had been apportioned for that purpose.

This happy outcome of a long agitation, lead by L. F. Loree, is due largely to the steadfast interest and support of Governor Lehman, who first arranged for the amendment of the state laws to permit the academy to operate ashore as well as afloat and then negotiated with the war department the relinquishment of the federal tract of some 50 acres to the state, to be divided approximately 20 acres to the academy and the remainder to the city of New York for use as a recreational area.

Governor Lehman thus carries on the powerful encouragement which President Roosevelt always gave the academy while governor. It was the latter who, in 1931, secured from the navy department the U. S. S. PROCYON, now the U. S. S. EMPIRE STATE, a cargo carrier of 11,500 tons displacement, to replace the antiquated NEWPORT, thus providing a thoroughly modern ship for training purposes.

As will be seen from the airplane illustration, the Fort Schuyler reservation occupies the historic little peninsula, known as Throgg's neck, which juts out into the entrance to Eastchester bay from the East river; it is one of three similar fortifications located in the port of New York, the others being Fort Slocum and Fort Totten. The Federal government purchased the Fort Schuyler tract outright in 1825, at a cost of $15,000, and about $5,000 more was expended in clearing up titles and to insure ingress and egress by the purchase of easements over private property. It was not until after the Civil war, however, that Fort Schuyler was completely developed as a fort, at a cost of several million dollars. It is interesting to observe, under these circumstances, that no war-like shot ever has been fired from the guns of Fort Schuyler.

Extensive Shore Line

About 3350 feet of shoreline is embraced in the shore base allotment. The bastions of the old fort enclose about 12 acres of the 20 acres set aside for the academy; the remainder of the buildings are of temporary wooden construction; though old, many of them have been placed in habitable condition through the efforts of relief workers. The major work, however, reconstruction of the frowning old fort, and construction of the mole type dock, still remains to be done before the academy can be considered to be actually installed in its new location. It is planned by the architects in charge to utilize stone, made available by removal of curtain walls and the like, in the construction of the dock; the dilapidated wooden dock now there is unsafe and must be removed.

In the construction of the new stone dock, MARINE REVIEW offers this suggestion; examination of the site indicates that on one or the other walls of the dock, ample room is available for installation of the four or five leading makes of boat davits

(*Continued on Page* 23)

FOREIGN SHIPPING

Business Improves, Optimism Increases

BY FRANK C. BOWEN

THE Cunard White Star superliner QUEEN MARY being satisfactorily launched, the next question is naturally the construction of a second ship of the type, for which £5,000,000 has already been earmarked under the act which gave the original aid to the Cunard White Star line and which is necessary for the smooth running of the service. The whole purpose was to build two giant ships which would do the work of three, and unless both are built with as little delay as possible the QUEEN MARY has little chance of showing operating returns satisfactory to the shareholders or to the taxpayers who have advanced the money.

The Second Superliner

In placing her contract the Cunard company had a free hand to do just what it thought best; John Brown, Vickers-Armstrong, and Swan, Hunter & Wigham Richardson were the only firms to tender and the matter was decided on the question of price. But it will not be so in the case of the new ship, for the loan from the government has brought in politics and every preparation is being made to use them to the utmost for the contract will be of the greatest value to any of the shipbuilding districts.

It would naturally be rather cheaper to build her at John Brown's for all the necessary special work to the slip, etc. has already been done for the QUEEN MARY, but the Tyne shipbuilding industry is very hard hit by unemployment at the present time and there they are already calling political meetings to bring pressure on their local members of parliament to secure the work for Vickers-Armstrong or Swan, Hunter & Wigham Richardson.

The Mersey is preparing to do the same, for Cammell Laird & Co. of Birkenhead could carry out the work, while the political record of the Clyde does not suggest that they will let their advantage go without a struggle. The position of Harland & Wolff, Belfast, is curious, for this company is under the Northern Irish government which has its trades facilities act and its historic connection with the White Star line which prevented its tendering for the QUEEN MARY is now a strong argument in its favor. But it is most unlikely that the taxpayers' money will be allowed to go out of the country.

The next session of parliament will show what plan the shipowners have to offer the government in order to obtain the £2,000,000 subsidy, for one of the cleverest things that Mr. Runciman, head of the board of trade, and, himself a shipowner, has ever done was to put the onus of finding a plan on the shoulders of the industry. It is certain that whatever scheme the government put forward would have been bitterly criticised by at least one section of the tramp shipowners.

Can Shipowners Agree?

Before Runciman's clever move every owner was suggesting his own pet remedy; since then there has been a most unusual and gratifying silence in the matter.

There is little doubt that the shipowners are disagreeing among themselves as heatedly as usual, but they are doing it behind closed doors and it is hoped that they are finding a a compromise which will be loyally adhered to and which will see British shipping over its present difficulties.

To the government's offer to lend money on reasonable terms for the improvement of existing tramps, or for the construction of new ones provided three tons are scrapped for every ton built, there is still a certain amount of keen opposition coming from two sources. One is from the officers' associations and men's union who consider that the scrapping of merchant ships will reduce the chances of employment and the other is from certain owners who refuse to admit that there is any advantage in the most modern improvements in tramp design as that would also be admitting that their own fleets are not all that they should be and shareholders are apt to be restive nowadays.

In the opinion of most people the attitude of the associations and unions is a mistaken one, for there is no employment in a ship permanently laid up and in the long run employment must go hand in hand with the improvement in the industry as a whole and its ability to stand up against foreign competition. The results obtained by similar policies followed by Italy, Germany and Japan appear to support the scrap-and-build scheme very strongly indeed.

Tanker Construction

The question as to whether the next few years will see something of a boom in the construction of tankers, or whether that business will be absolutely quiet, adds interest to the international tanker pool which includes in its program the discouragement of building until freights have gone up to a much higher level than they are at present. The initial operations of the pool were admittedly disappointing, but while it is obviously unfair to judge too strictly on the

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A quarterly review of European shipping. The first, second and third articles for this year appeared in the February, May and August issues, respectively.

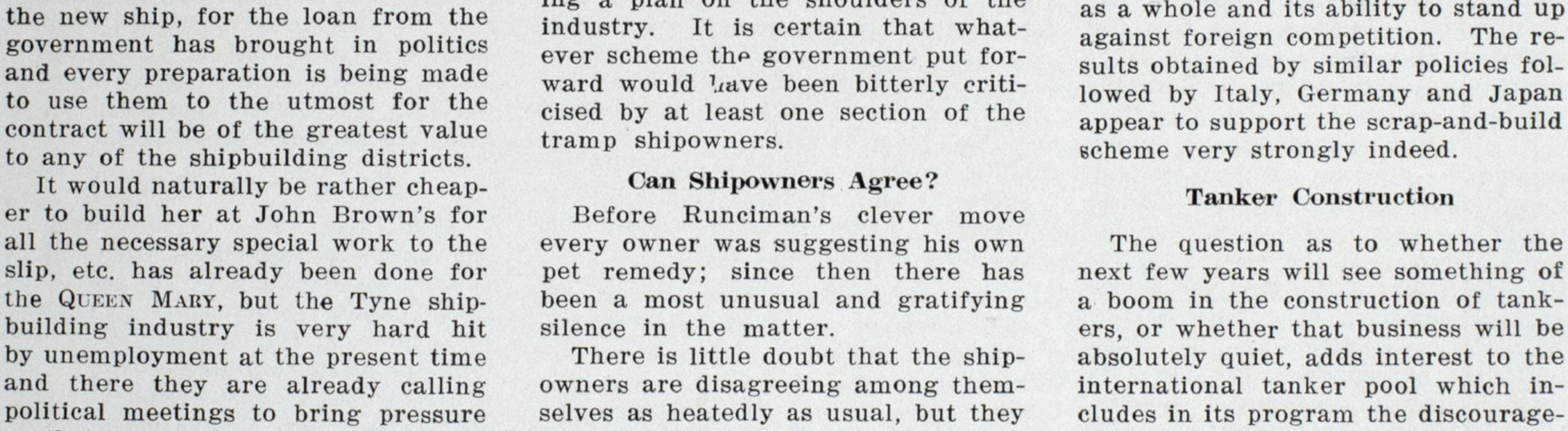

1930
1931
1932
1933
1934
Dec. Jan. Feb. March April May June July Aug. Sept. Oct. Nov. Dec.
60 55 50 45 40 35 30 25 20 15 10 5
"STATIST" INDEX OF BRITISH SHIPPING FREIGHTS
INDEX OF FREIGHTS BETWEEN U. S. A. AND WESTERN EUROPE
AVERAGE OF 1920 RATES TAKEN AS 100

Diagram showing the fluctuations of ocean freight rates for four years and eight months

Trend of Trade and Shipping in British Isles

	June	July	August	Eight months ended Aug. 31, 1934	1933
Total entrances of cargo ships into British ports:					
Number of vessels	4,856	4,795	4,835	33,363	31,460
Tons	5,710,718	5,706,116	5,725,850	41,480,783	39,530,582
Tonnage from Atlantic coast of North America	1,092,694	1,013,979	990,184	7,015,553	7,377,332
	(19.1%)	(18%)	(17.3%)	(17%)	(18.7%)
Total clearances from British ports:					
Number of vessels	4,271	4,374	4,510	33,105	32,411
Tons	4,900,967	4,836,812	5,239,139	37,172,199	36,696,728
Tonnage going to Atlantic coast of North America	1,069,140	901,331	1,061,197	6,522,155	6,800,428
	(21.9%)	(18.7%)	(20.2%)	(17.5%)	(18.5%)
Total value of goods:					
Exported	£36,435,687	£37,358,340	£35,391,606	£291,520,683	£269,953,542
Imported	£61,172,638	£58,026,218	£60,027,050	£479,444,259	£430,163,198
Exports of coal:					
Tons	3,556,534	3,378,969	3,268,504	26,095,313	25,438,690
Value	£2,825,908	£2,742,547	£2,581,270	£20,803,365	£20,448,783
Tonnage shipped for use of steamers	1,148,694	1,089,025	1,211,326	9,010,950	8,861,964

earliest days of a movement of this sort the pool is publishing some exceedingly useful figures which are interesting to everybody connected with the tanker business for themselves as well as for their justification of the pool's activities.

All efforts have failed to persuade the Americans to come into the agreement but there are nine European countries, ranging from Norway with 136 ships and Britain with 94, to Turkey at the other end of the scale with a single steamer. The Norwegian fleet consists of 26 steamers and 110 motorships, with 10 motorships building. At present the fleet of 94 British tankers is evenly divided between steam and diesel while 2 more steamers are under construction. Italy has one motorship building.

Age of Tankers

As far as age is concerned, which counts a lot in a spirit tanker whose rivets and pumping connections are always corroding away, Norway and Denmark ties for the most advantageous place with an average age of five years each for their motor tankers; the number of steam is negligible in their case. Sweden's tankers average six years each, all motor, after which Holland, France and Britain tie with an average of seven years.

This, however, applies to the motor tankers only and Britain has 47 steamers against France's 11 and Holland's one, so that the British average would be very considerably higher if they were taken into consideration. Finally, Italy with 40 steam and 7 diesel tankers has an average age of twelve years for the latter so that although she has only one building at the moment she will probably have to launch a program soon if she is to maintain her position, which her government obviously intends that she shall do. That will probably upset all the calculations of the pool and relieve British owners of their anxiety that Norway will be able to drive them out of the oil tramping business altogether.

In spite of the fact that it is obvious that the difficulties of shipping are not by any means over yet—many of them, indeed, appear to become more complicated—the feeling of restrained optimism which became general throughout the European shipping world some months ago continues to be justified and the improvement, although terribly slow, appears to be sure. Laid-up figures are down in practically every country, and although these are largely accounted for by ships sent to the scrappers there is a generally healthier tone.

Shipping Definitely Improved

There is no doubt that far more business is being done by the cargo liners and even the tramps can find satisfaction in the latest freight returns for the first time for a long period. The passenger business is appreciably up, both on the regular runs and for yachting cruises.

The shipyards are also getting a good deal more business, although by far the greater part of it is at a cut price and it is in only one or two districts, notably Belfast and Gothenburg, that the yards are working to anything like a reasonable proportion of their capacity. But everywhere in Europe shipping affairs are on the up-grade, even if ever so slightly.

Clinton L. Bardo Retires

Following the resignation of Clinton L. Bardo as president of the New York Shipbuilding Co. on Oct. 19, J. F. Metten, well known marine engineer and vice president of the company, was elected as his successor. At the same time L. B. Manning was elected chairman of the board succeeding E. L. Cord, who also resigned. C. M. Kaltwasser was elected executive vice president and Roy Campbell was appointed general manager, succeeding E. I. Cornbrooks. These appointments go into effect as of Nov. 1. The new board of directors is made up of the following: L. B. Manning, W. H. Beal, Ralph Libenderfer, Gene Tunney, R. S. Pruitt, C. M. Kaltwasser and J. F. Metten.

In commenting on his resignation Mr. Bardo said that he is looking forward to a "well earned rest and getting in a little play. I'll be sixty-seven years old Oct. 24 and I think it is about time I had a rest. This is the first day of real rest I've had in years."

In 1924 Mr. Bardo resigned as vice president of the New Haven Railroad to become interested in shipping and shipbuilding, later becoming president of the New York Shipbuilding Co., with which company he first became connected in 1926. The company now has contracts on hand totaling about $40,000,000. Its surplus now is $6,075,607 as against $1,654,000 when Mr. Bardo first joined the company.

Shore Headquarters

(*Continued from Page* 21)

commonly in use in our merchant marine. Let these be permanently installed, simulating a boat deck, and use the waters at the dock face as a small boat basin. Not only would this provide the finest of training for the cadets but would make it possible for the licensing authorities to require from adult applicants an actual demonstration of skill in small boat handling, rather than to depend upon oral examinations as at present. Experience has shown that swift and skillful launching of life boats is one of the most urgent requirements of the merchant marine. By all means, let us have a fully-equipped "boat deck" and small boat basin.

Plans call for a mole dock 200 feet x 400 feet and it is ideally situated to protect the two school ships, even in the worst of storms.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

TYING two light oil barges securely side by side in anchorage ground in 8 feet of water, and dropping a single 2000 pound anchor, so that the barges tailed in the tide on 20 fathoms of anchor chain, the weather being calm and there being no storm warning, was held, in the case of WILLIAM J. DICKEY, 7 Fed. Supp. 308, to be the proper and customary way of anchoring barges. In determining whether the barges were properly anchored, a forecast of "local thunder showers tonight" was not a sufficient warning of heavy rain and gale which rose to a velocity of 60 miles per hour. The fact that when the storm broke a second anchor was put out only after the barges had drifted into fairway did not show fault so as to render the barge owner liable when a steamer, unable to see her way past the barges, anchored and drifted upon carfloats, as the bargees acted competently and dropped the second anchor as soon as the severity of the storm became manifest.

* * *

THE fact that a tug was towing a barge on a hawser of 185 fathoms in violation of regulations for tows in inland waters, did not impose liability upon the tug for damage caused by collision of the barge with scows unless such violation was a contributing cause, it was declared in the case of HENRY W. CARD, 7 Fed. Supp. 324. In this case the evidence showed a boat on a long hawser steers better than one on a short hawser, and a long hawser helps to keep the following boat behind the tug, due to the fact that the bight of the hawser is down in the water. A towed barge which is steered with its own wheel has the duty to follow the tug as respects the liability of the tug for damages caused by collision of the barge with the scows above mentioned.

* * *

WHERE a tug, to straighten herself and her tow in a river, intentionally-contacted with a float, causing such float and other floats to go adrift and collide with still other floats of the same owner, the tug was negligent and was the sole cause of injury, since any violation of statute or regulation by the owner of the floats in having them at the end of its dock was not a contributing cause of collision. An owner putting floats at the end of its dock was not required so to make fast the floats as to support the weight of a tug and her tow dropping with the tide on the outer up-river corner of the float. The floats did not become outlaws, as respects liability of the tug for intentionally colliding with the floats so as to straighten the tug and her tow in the river. —ROCHESTER, 7 Fed. Supp. 327.

* * *

IN A suit to recover the value of a cargo lost in carriage, by the sinking of the barge in which it was being carried, the burden of establishing that in truth the loss was due not to any negligence or fault of the carrying barge or to the navigating tug, but to causes included in the meaning of the phrase "perils of the sea," was on the owner of the barge and tug.—Charles Dreifus Co. vs. Diamond P. Transportation Co. 7 Fed. Supp. 363.

* * *

A SEAMAN (in this case, an engineer), in order to recover for injuries sustained on a vessel, must show with reasonable certainty that he was injured through breach of duty, or negligence on the part of the shipowner, or facts for the application of the doctrine of res ipsa loquitur. The engineer, not being under orders at the time of his injury, assumed the ordinary risks incident to his employment and those which were obvious and known to him, and in no event could recover more than maintenance and cure; however, the engineer, having received attention at a marine hospital and expended nothing for cure, was held barred from recovering for maintenance and cure.—Fleischman v. United States, 7 Fed. Supp. 373.

* * *

IN the case of Manuel Arnus, 7 Fed. Supp. 401, the court decided that a steamship was not liable on the government's libel in rem for bringing an alien to the United States, where the alien was a stowaway. The court, in arriving at the decision, stated that a stowaway should fall within the same category with members of the crew and through passengers, because from the very name given to him, it is implicit that he was on board without the knowledge or permission of the owner of the ship and, consequently, the ship could not be guilty intentionally of bringing the alien to this country.

* * *

UNDER the circumstances in the case of San Souci v. Compagnie Francaise De Navigation A. Vapeur, 71 F. (2d) 651, the fact that the secretary of labor, in fining a steamship company for bringing in diseased aliens, considered, with other evidence, a certificate of the health department's physician that the disease was discoverable at the port of embarkation, without having submitted to the physician protests and affidavits presented to the secretary, showing that the aliens had been examined at the port of embarkation by competent physicians, was held not to show an abuse of discretion. The secretary of labor's determination of the weight of evidence, in deciding whether the contagious disease of such aliens was discoverable at the port of embarkation so as to render the steamship company subject to fines, was held to be final and conclusive on the court.

* * *

WHEN a steamer signalling an overtaken lighter for passage to the latter's right, received no answer, she was bound to allow for, and take the risk of, any movement of the lighter.—SYOSSET, 71 F. (2d) 666.

* * *

THE fact that neither the seller of coal, title to which and risk of loss had passed to the buyer before the loss thereof when the barge on which it was being carried was sunk by a tug, nor the seller's insurer, paying loss not covered by its policy, had a cause of action against the tug or the claimant thereof, was immaterial in a suit by the barge owner as bailee of the coal against the tug for damages, and the fact that the seller of the coal voluntarily gave the buyer a second cargo was no defense to the barge owner's suit.—W. C. BLOCK, 71 F (2d) 682.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	271	1,645,919	284	1,624,272
August	296	1,815,221	332	1,859,966
July	313	1,686,825	295	1,574,395
June	239	1,696,804	324	1,785,815
May	291	1,597,233	316	1,662,711
April	288	1,599,185	274	1,477,492
March	302	1,706,307	313	1,757,221
February	265	1,481,004	267	1,508,905
January	266	1,649,590	284	1,629,438
December, 1933	263	1,496,447	291	1,576,199

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	52	143,092	44	115,845
August	56	151,501	41	120,875
July	48	125,616	35	89,902
June	61	191,042	53	155,308
May	58	169,719	50	143,652
April	67	199,032	48	147,083
March	59	162,480	48	140,311
February	42	129,940	36	109,973
January	45	139,259	47	133,427
December, 1933	54	175,715	45	135,969

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	110	362,773	75	238,557
August	129	377,219	106	363,789
July	136	374,494	112	392,586
June	125	337,627	105	316,594
May	105	301,785	82	245,571
April	86	309,725	58	227,404
March	88	304,604	64	259,406
February	71	247,077	46	162,542
January	97	330,320	60	225,075
December	84	303,806	52	236,871
November, 1933	90	323,540	62	230,969

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	16	35,064	15	34,285
August	23	31,559	21	31,672
July	14	27,034	12	26,525
June	15	30,296	16	43,232
May	15	27,376	15	32.378
April	14	20,555	15	20,572
March	13	33,399	13	33,399
February	11	27,213	11	27,213
January	9	22,908	10	25,570
December, 1933	13	31,801	13	32,589

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	4	13,022	2	8,628
August	7	12,240	5	11,809
July	4	11,634	4	17,821
June	8	14,773	4	4,887
May	3	4,985	1	2,022
April	3	4,985	1	2,022
March	5	17,973	2	7,422
February	7	20,959	2	6,882
January	2	7,694	....	.....
December, 1933	5	5,089	2	8,350

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	30	119,182	49	194,079
July	12	46,946	11	39,730
June	10	34,726	1	2,298
May	11	41,765	17	58,993
April	31	117,094	42	157,954
March	32	121,085	50	186,817
February	25	95,774	52	198,593
January	32	116,610	50	188,401
December	31	119,833	51	184,646
November	29	108,890	35	130,457
October, 1933	26	102,926	46	173,030

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	91	276,111	93	284,297
August	92	278,812	96	280,641
July	108	319,102	106	311,583
June	108	339,280	112	356,445
May	104	329,312	107	328,998
April	102	300,396	108	334,583
March	92	288,061	88	273,131
February	77	261,122	77	263,236
January	78	256,942	80	265,681
December	94	298,001	92	286,746
November, 1933	90	270,023	88	267,784

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	26	67,068	44	107,698
August	21	111,553	37	113,616
July	25	76,320	33	91,111
June	39	91,293	57	127,068
May	31	71,706	50	103,737
April	21	65,701	47	125,291
March	23	64,469	60	151,360
February	16	47,708	41	102,933
January	22	68,930	41	112,922
December, 1933	17	57,307	42	119,186

Jacksonville

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	18	21,329	18	24,657
August	20	25,558	21	37,676
July	18	16,470	16	18,145
June	16	21,226	18	30,898
May	14	13,340	22	38,824
April	10	10,464	7	12,164
March	9	16,338	9	11,193
February	8	10,900	11	20,348
January	7	13,017	10	22,508
December, 1933	8	15,083	11	22,837

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	21	23,268	21	23,282
August	23	24,392	24	24,706
July	25	24,469	25	25,564
June	28	33,701	25	32,548
May	40	57,180	42	58,094
April	28	36,197	21	36,066
March	24	38,052	23	37,658
February	23	36,476	24	36,523
January	25	39,966	22	38,764
December, 1933	22	38,764	22	38,764

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	102	228,304	115	260,544
August	108	256,663	101	237,852
July	102	221,011	99	225,308
June	119	254,040	115	237,054
May	115	255,503	114	253,294
April	113	254,839	103	239,371
March	115	275,629	129	309,123
February	115	268,707	112	251,232
January	118	282,972	125	298,570
December, 1933	123	279,151	109	253,209

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	45	184,361	43	221,241
August	43	176,644	54	223,038
July	24	93,558	20	82,646
June	16	73,128	12	52,309
May	22	103,441	19	86,295
April	62	264,608	67	278,172
March	52	203,796	51	205,371
February	54	226,118	62	251,281
January	52	221,000	55	230,995
December, 1933	54	225,842	60	246,987

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	145	385,557	154	403,163
July	156	439,297	154	423,642
June	141	300,349	151	416,734
May	167	482,123	152	421,839
April	169	487,655	170	475,121
March	155	422,855	166	449,394
February	151	446,952	145	414,515
January	146	423,759	145	414,918
December	139	398,112	152	443,496
November	148	439,238	152	430,631
October, 1933	154	467,332	169	506,324

Charleston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	35	102,325	28	80,390
August	32	97,695	36	97,663
July	41	99,233	34	81,362
June	36	95,072	31	81,094
May	36	98,475	23	69,764
April	38	101,315	34	96,705
March	44	131,839	37	109,492
February	40	112,884	39	109,597
January	23	60,138	25	66,827
December, 1933	35	111,420	32	97,473

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	11	20,301	62	193,647
August	12	21,967	55	160,727
July	21	33,508	60	163,282
June	25	57,920	71	215,594
May	21	34,457	56	141,885
April	27	50,294	82	219,283
March	29	54,379	94	264,101
February	22	41,945	77	236,784
January	23	43,664	86	252,595
December	19	40,552	90	279,537
November, 1933	16	37,590	85	262,800

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	214	804,221	197	791,324
August	218	801,482	201	785,671
July	198	710,210	186	755,686
June	201	743,198	186	738,880
May	200	754,695	197	738,307
April	186	696,716	167	679,883
March	168	669,548	169	691,230
February	154	629,859	165	624,170
January	176	686,201	146	616,189
December, 1933	169	639,444	164	629,462

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1934	146	614,180	160	675,941
August	160	699,105	178	781,553
July	118	484,655	119	471,702
June	126	386,966	110	456,027
May	152	452,827	140	593,715
April	165	831,501	169	729,273
March	150	659,251	181	772,219
February	141	503,105	154	659,366
January	163	722,800	197	764,823
December, 1933	137	616,820	172	739,604

Houston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	19	76,104	22	88,631
July	24	93,810	24	86,702
June	27	115,730	33	133,108
May	29	109,223	45	132,318
April	31	121,318	40	155,327
March	23	89,200	39	144,546
February	22	88,094	26	99,931
January	23	88,164	37	128,773
December	18	65,566	31	109,206
November, 1933	14	49,486	30	106,943

Note: At the port of Philadelphia, additional vessels in the foreign trade (via other American ports) were 58 of 199,002 net tons entered and 78 of 266,567 net tons cleared for the month of September.

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Sales—Reconditioning—Launchings—Trial Trips

THE light cruiser, awarded to the Newport News Shipbuilding & Dry Dock Co. on Aug. 22, at a contract price of $11,650,000, will be somewhat similar to the HOUSTON and AUGUSTA, but with smaller guns and more facilities for handling aircraft. Time for her building, which is 36 months, will extend about six months beyond the delivery of the ENTERPRISE, the second aircraft carrier. The contract provides that the vessel be similar to the light cruisers building at the New York Shipbuilding Co., and that some of the plans are to be secured from that company. This will help to speed up the design work.

The general characteristics of the new vessel are as follows: Length overall, 608 feet 4 inches; length between perpendiculars, 600 feet; beam molded, at 21 feet 9 inches waterline, 59 feet 6¾ inches; depth to main deck, 42 feet ⅜-inch; draft, mean, 21 feet 8½ inches; displacement, standard, tons, 10,000; and speed, 33.6 knots. The propelling machinery will be geared steam turbines on four shafts, one high pressure and one low pressure and astern on each shaft. There will be cruising turbines on two shafts.

Cadmium Plating

In many cases where size of a work piece prevents cadmium plating, builders of heavy apparatus are using the molten metal spray gun method of applying cadmium as well as other metals.

A manufacturer of marine apparatus is applying cadmium in coatings up to 1/32-inch thick in this way to afford protection against salt water. This manufacturer prepares the steel to be quoted by subjecting it to a sandblasting operation which affords a clean rough surface on which the sprayed metal will be tightly keyed.

The above is taken from paper by E. V. David, Air Reduction Sales Corp., N. Y. before American Welding Society, N. Y. Oct. 3, 1934.

Harbor Cutters Launched

The coast guard harbor cutters, CALUMET, NAVESINK and TUCKAHOE, under construction in the drydock at the United States navy yard, Charleston, S. C., were launched by flooding the dock on Sept. 28. The CALUMET was almost completed at launching, with machinery installed, while the other two vessels were finished structurally up to the main deck. The last vessel is scheduled for delivery by Jan. 15, 1935. Keels were laid on June 8 last.

The fourth of the program of new harbor cutters for the United States coast guard, the HUDSON, was launched at the United States navy yard, Portsmouth, N. H., on Oct. 5. She will be commissioned on Oct. 29.

Specifications of these vessels, which are diesel electric drive, were noted in the April issue of MARINE REVIEW in an article covering the coast guard shipbuilding program.

A Second Superliner

It is reported that it has been definitely decided to build a sister ship to the superliner QUEEN MARY. Before placing the order, officials of the Cunard White Star Ltd. will carefully consider the claims of the various British shipbuilding companies, who have the facilities for carrying out so large an order. It is yet too early for anything definite in regard to the actual placing of the order.

On his recent return from England after witnessing the launching, Harold P. Boren, passenger traffic manager of the Cunard White Star Ltd. stated that the QUEEN MARY and her projected sister ship could be operated with no greater expense than three smaller ships of lesser speeds, because two such ships could maintain a weekly service Also it is understood that the QUEEN MARY will not require so large a crew as some of the lesser vessels now in service.

Luckenbach Cargo Liner

The WILLIAM LUCKENBACH of the Luckenbach line fleet, formerly the United States navy transport RAPPAHANNOCK, completed her first voyage for the Luckenbach line when she arrived in New York from Pacific coast ports on Oct. 4.

The vessel was acquired from the navy about six months ago and was reconditioned at a cost of more than $200,000 at the Seattle plant of the Todd Shipyards Corp. She is a vessel of 6933 gross tons and has a cargo capacity of about 528,000 cubic feet. Her speed is about 16 knots.

Accommodations for 16 passengers, including a modern lounge and dining room, were installed when the vessel was reconditioned. The passenger quarters, all outside rooms, are equipped with twin beds and private baths and showers.

The entry of the WILLIAM LUCKENBACH into service makes a total of 23 vessels flying the Luckenbach line flag. Weekly services westbound and sailing every five days eastbound are maintained by the company in the coast-to-coast-run.

E. L. Shea, president of the Tidewater Oil Co., recently announced that this company will build a large gasoline and oil terminal at Syracuse, N. Y. As previously reported the company now has underway the building of a 45-acre marine terminal at Boston.

Patrol Boats Completed

Completing its contract under the time limit the Lake Union Dry Docks & Machine Works, Seattle, delivered the third coast guard patrol vessel CYANE on Oct. 20. The sister vessels ARIADNE and ATALANTA have already been delivered.

These three patrol boats were built at a total cost of $757,500. On trials they developed 16½ knots with their two Winton diesel engines, 650-horsepower each. The ATALANTA had a real sea test when she was sent to the aid of a stricken vessel off the Alaskan coast, shortly after being in commission.

Commander A. M. Martinson has been given command of the ARIADNE and after preliminary crew's drill he proceeded to San Francisco, where the vessel will be based. The ATALANTA is based on Seattle and the CYANE will proceed to her base at Ketchikan, Alaska, at an early date.

The Star Fuel Oil Co. Inc., Ridgefield Park, N. J., has purchased from the Studerus Oil Co, Kearny, N. J., the 150,000-gallon nonpropelled truss-weld barge, delivered to the latter company last winter by the United Dry Docks Inc. It is understood that Mr. Studerus will place an immediate order for a new truss-weld barge of double the cargo capacity or 300,000 gallons.

The Ilg Electric Ventilating Co., 2850 North Crawford avenue, Chicago, has issued a new pocket size handbook on ventilating heating, cooling and air conditioning.

Shipbuilding Activities in Northwest Yards

The United States destroyer WORDEN, building at the navy yard, Puget Sound, Wash., is to be launched on Navy Day, Oct. 27. The keel was laid Dec. 29, 1932. Two sister vessels, the PERKINS and CUSHING, are now on the ways at the same yard, their keels having been laid recently.

The 10,000-ton cruiser ASTORIA has returned to the Puget Sound navy yard after a shakedown trip. Alterations to cost $200,000 have been authorized, as the ASTORIA is to be used as a flagship. Admiral's quarters are to be installed and the plans also call for a re-arrangement of officers' quarters.

R. R. Tinkham, superintendent of the seventeenth lighthouse district, Portland, Oreg., opened bids Oct. 24 for changes in lightship No. 88. This vessel is to be converted from a coal burner to diesel power and will have a 350-horsepower unit installed. Plans also call for structural changes and partial rebuilding.

Mojean & Erickson, Tacoma, Wash., is the low bidder at $14,944 for the construction of a 72-foot wooden-hull tugboat for the Alaska-Juneau Gold Mining Co., Juneau, Alaska. The plans were prepared by H. C. Hanson, Seattle naval architect. The tug will be of heavy construction and will be fitted with a 275-horsepower diesel engine. It will be used for towing scows of rock to and from the mines. Equipment will include windlass and towing winch.

The BROWN BEAR, to be the mother ship for the United States biological survey in Alaska, will be launched at the Winslow Marine Railway & Shipbuilding Co., Winslow, Wash., on Nov. 7. The new vessel is 115 feet in length, 26 feet beam, and has a depth of 11½ feet. She will be powered with two 200-horsepower Washington Iron Works diesel engines.

The GRIZZLY BEAR, also for the United States biological survey, will be launched Nov. 10, at the Lake Union plant of W. J. Schertzer Boat & Machine Works. She is 57 feet in length, 14 feet in beam, and has a depth of 6 feet. The propelling power is a 90-horsepower Washington diesel.

The Bethlehem Shipbuilding Corp. has installed a new 8000-ton floating drydock at its Baltimore plant. This plant is now in a position to drydock three vessels at the same time. The new dry dock is an addition to a 10,000-ton graving dock and a 6000-ton floating dock. At its Sparrows Point, Md., plant, the Bethlehem Shipbuilding Corp, has a 20,000-ton capacity floating dry dock.

Keels were laid on Oct. 1 at the navy yard, Philadelphia, for two 1500-ton destroyers, to be named the CASSIN and the SHAW.

The first of these vessels is to be completed Feb. 1, 1936, and the second May 1, the same year. The estimated cost is $2,700,000 apiece.

Morro Castle Salvage

It has been reported that Harold L. Ickes, secretary of the interior and public works administrator, has set aside $180,000 for salvaging the hulk of the MORRO CASTLE, now imbedded in the sand off Asbury Park, N. J.

The navy department through its board of inspection and survey has made an examination of the vessel to determine whether her condition of hull and machinery would justify the cost of salvage. It is said that the navy department has in mind her conversion to a tender for naval vessels.

Babcock & Wilcox Co., New York, was reported as low bidder on water and steam drums for ships under construction at the navy yards, Boston and Norfolk, Va., at $167,436.69, and for similar equipment for west coast yards at $102,046.74 delivered, or $99,481.74 f.o.b. works.

De Laval Steam Turbine Co., Trenton, N. J., has been awarded contract for turbine driven pumps and spares, for the navy yard, New York, at $95,-416, and for the navy yard, Philadelphia, at the same quotations.

Award Contract to Dravo for River Towboat

The Pittsburgh Coal Co., one of the oldest operating companies on the Western rivers, on Oct. 4 awarded a contract to the Dravo Contracting Co., Pittsburgh, for the construction of an 800-horsepower steel hull stern-wheel towboat for service on the Ohio and the Monongahela rivers.

The boiler and condensing equipment will be supplied by the Foster-Wheeler Corp. Propelling machinery, consisting of two tandem compound condensing steam engines, is to be supplied by the Nordberg Mfg. Co. Heaters and evaporators are to be of Davis Engineering Co. make. Worthington Pump & Machinery Corp. will supply the pumps, and deck machinery will be supplied by the American Engineering Co.

Hull dimensions are 148 feet in length, 24 feet in beam and 6 feet in depth. The overall length will be 174 feet. The new vessel is scheduled for completion in seven and a half months, and will represent an outlay of $265,-000. Plans and specifications were prepared by T. R. Tarn, naval architect, Pittsburgh. He will also supervise the construction. The name of this new towboat will be CHAMPION COAL.

Tug for Erie Railroad

According to information received on Oct. 18, the Erie Railroad Co. will issue plans and specifications some time within the next 30 days for a new double ended steel ferry boat which is to be the largest vessel in its fleet.

The new vessel, plans for which are being prepared by J. W. Millard, New York naval architect, will be 234 feet in length overall, 64 feet in beam over the guards and 18 feet 6 inches in depth, and will be steam driven.

She will be used in service between New York and New Jersey terminals.

The United States navy yard, Charleston, S. C., has under construction coast guard cutter No. 71, which has been named GEORGE M. BIBB.

Bunker Prices

At New York

	Coal F. o. b. per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Oct. 19, 1934	5.63@5.48	1.20	4.65
Sept. 19	5.63@5.48	1.35	4.79
Aug. 18	5.63@5.48	1.35	4.79
July 19	5.63@5.48	1.35	4.79
June 19	5.63@5.48	1.35	4.79
May 18	5.63@5.48	1.35	4.79
April 19	5.63@5.48	1.35	4.79
Mar. 19	5.35@5.20	1.25	4.79
Feb. 19	5.35@5.20	1.25	4.79
Jan. 18	5.35@5.20	1.25	4.79
Dec. 18, 1933	5.35@5.20	1.25	4.79
Nov. 18	5.35@5.20	1.15	4.70½

At Philadelphia

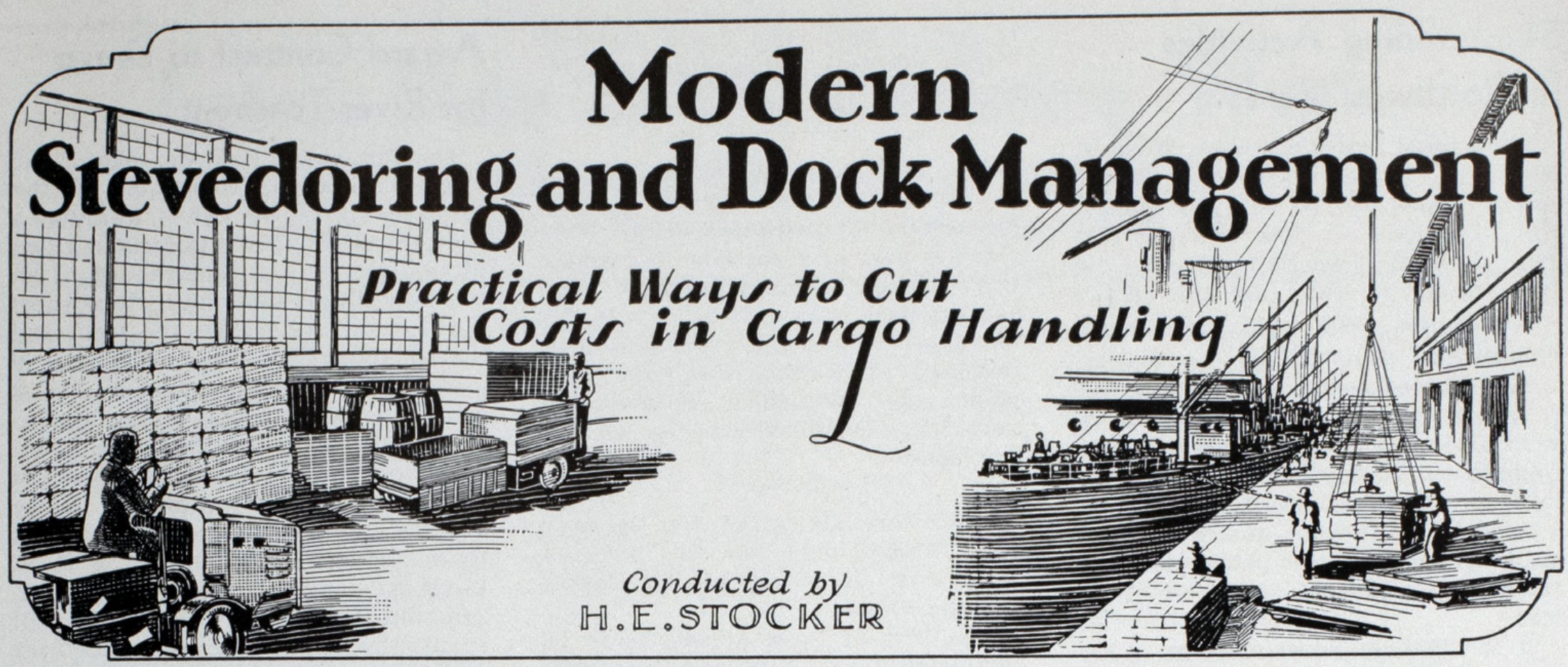
	Coal trim in bulk per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Oct. 19, 1934	4.93@4.78	1.20	4.61
Sept. 19	4.93@4.78	1.35	4.76
Aug. 18	4.93@4.78	1.35	4.76
July 19	4.93@4.78	1.35	4.76
June 19	4.93@4.78	1.35	4.76
May 18	4.93@4.78	1.35	4.76
April 19	4.93@4.78	1.35	4.76
Mar. 19	4.65@4.50	1.25	4.76
Feb. 19	4.65@4.50	1.25	4.76
Jan. 18	4.65@4.50	1.25	4.76
Dec. 18, 1933	4.65@4.50	1.15	4.76
Nov. 18	4.65@4.50	1.15	4.76

Other Ports

Oct. 19, 1934

Boston, coal, per ton	$8.00
Boston, oil, f. a. s. per barrel	$1.26½
Hampton Roads, coal, per ton, f.o.b. piers	$5.00
Cardiff, coal, per ton	13s 6d
London, coal, per ton	—s —d
Antwerp, coal, per ton	15s 9d
Antwerp, Fuel oil, per ton	—s —d
Antwerp, Diesel oil, per ton	—s —d
British ports, Fuel oil	—s —d
British ports, Diesel oil	—s —d

Note: Figures given for coal at New York and Philadelphia are for Classes A and B according to the Code; Class C is slightly less.



Application of Transportation Principles Will Increase Vessel's Earnings

By H. E. Stocker

TRANSPORTATION principles are generalities determined from particular facts. They are valuable in training the mind to see the relationship of facts clearly and in assisting in analyzing cargo handling problems.

Principles should not be confused with theories. Theories exist in the mind only and must be verified by experiment and observation before their value is known, but principles have been verified and are just as much facts as equipment and successful methods of cargo handling. Newton at one time had a theory about gravity. By observation and experiment he verified the theory and it became Newton's law or principle of gravity.

Knowledge of principles has proved of value in the supervision of cargo handling operations and in planning sailing schedules. In one case an executive put into effect a plan which caused the company to lose eight times his salary. This loss was stopped by another executive of lower rank who had had much less experience than his superior but who understood the fundamental principles of transportation. The saving to the company exceeded his salary ten times.

The principles to be considered in this article are the terminal time principle, the handling principle and the mechanical equipment principle.

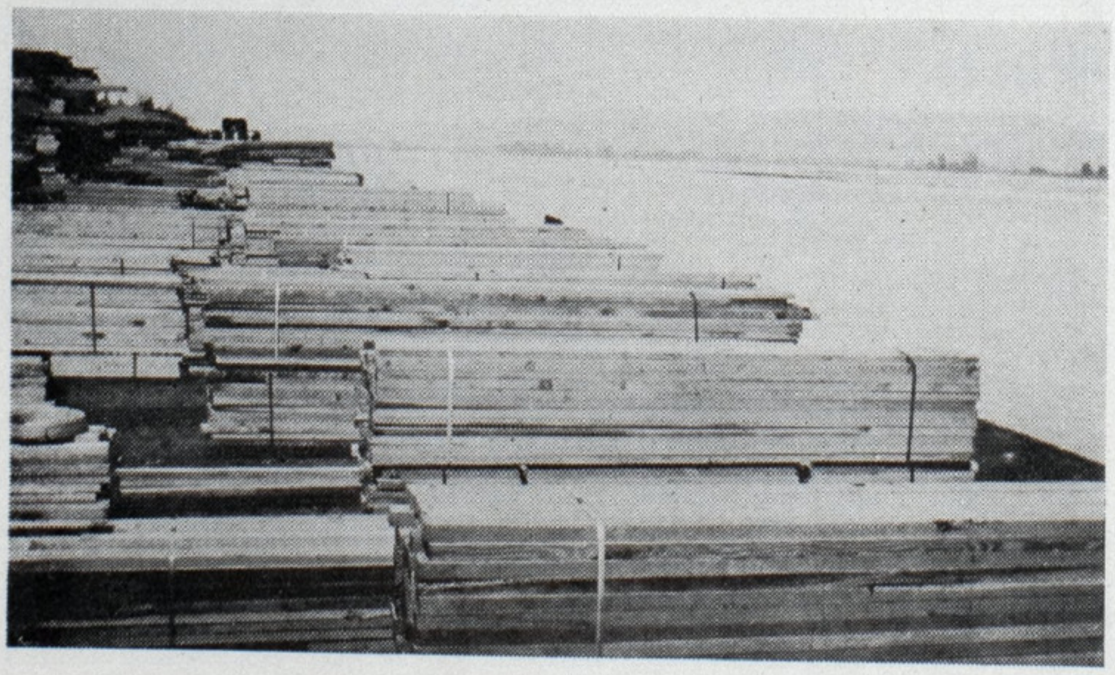
Minimum Terminal Time

The terminal time principle is important because it deals with the very essence of transportation. Ships are built to move freight, not to be held at terminals and therefore they are operated with the greatest economy when they are held at terminals loading and discharging freight a *minimum* amount of time.

The terminal time principle is stated as follows: "Economy in transportation is obtained by reducing terminal time to the minimum." This principle has been formulated as a result of observation of terminal operations of every character including plant transportation as well as operations of ships, barges, motor trucks, railroads and airplanes.

In some cases terminal time has been reduced to such a low point that a ship may operate profitably although the return voyage is made without cargo. An excellent example of this was described in detail in the October issue. The ships of the Nicholson-Universal Steamship Co. stay in port 11 to 16 per cent of their time as compared with as much as 55 per cent spent in port by ships in the intercoastal trade. Tankers time in port is low so that although no return cargo is carried they are operated profitably. Keeping at the chief function of a transportation unit—moving cargo between terminals—they are able to transport sufficient tons in a year to make a profit. A general cargo ship must obtain return cargoes in order to transport sufficient tons yearly to make a profit.

If the terminal time of a general cargo ship can be reduced it is capable of transporting more tons yearly and hence make a better financial showing.



Lumber strapped in units containing many pieces is more economical to handle

For example, on a one hundred day voyage the ship makes three voyages a year. Fifty days are spent in port handling cargo. If by faster handling of cargo the port time is reduced 10 days, the total voyage time is reduced to 90 days and the ship makes 4 trips a year, a gain of 11 per cent. Formerly the ship carried 10,000 tons a voyage and 30,000 tons in a year. By reducing the port time the yearly tonnage is increased to 40,000 tons. This increased business is obtained without a proportionate increase in costs because certain costs are on a yearly basis so that the greater the number of voyages the lower cost per voyage. For example, organization costs and capital charges are fixed costs. This may also be true of pier rental.

Rapid Cargo Handling

The next point to be considered is the means by which the much desired reduction of terminal time is to be obtained. Although various operating matters influence the terminal time of a ship, the most important is the speed of handling cargo.

This brings us to the next principle of transportation, the handling principle, which may be stated as: "Economy in cargo handling is obtained by not handling it." The truth of this principle is readily apparent to anyone who analyzes cargo handling thoroughly, yet on many terminals the principle is ignored. In most of these cases, this situation could be corrected and large sums saved by the appointment of a cargo handling executive who would have no other duty but the supervision of cargo handling. It is too important a function to be given only part time supervision by an operating manager.

Economy in handling is obtained by increasing the size of the handling unit, whether this be the package prepared by the shipper or a handling unit made up on the terminal by the shipping company. The canned goods shipper gives the shipping company a 55-pound case but this is not an economical unit of handling. Sixty of these cases placed on a skid platform so that the unit is increased to 3300 pounds, is an economic unit of handling.

Some shippers use packages which weigh as little as 7 pounds. This unit is so costly to handle, that the railroads at New York will not lighter a shipment of this kind to a steamer without charge as they do when packages weigh 15 pounds and over.

Number Of Handlings

In another case a shipment of 36,000 pounds contained 2850 cases. Each case weighed 13 pounds and measured eight inches by seven and one half inches by seven inches. There were 12 handlings from the last machine in the factory to the warehouse of the wholesale grocer on the Pacific coast. Twelve times 2850 cases gives a total of 34,200 handlings! This shipment could have been combined into 12 skid loads and the total handlings reduced to 144, a decrease of 99.6 per cent.

When ships are not equipped with sideports, the larger unit is especially important because it results in larger slingloads and greater use of the equipment. The hoist is the bottle neck and increasing the slingload increases the tons handled per hatch hour.

Shipments on skids with a gross weight of over two or three tons force the use of mechanical equipment. Hand and power lift trucks are used. If the shipping company provides heavier handling units by placing cases on trailers as they are received and holding them on trailers until stowed in the ship, tractors are used to haul the trailers about the terminal.

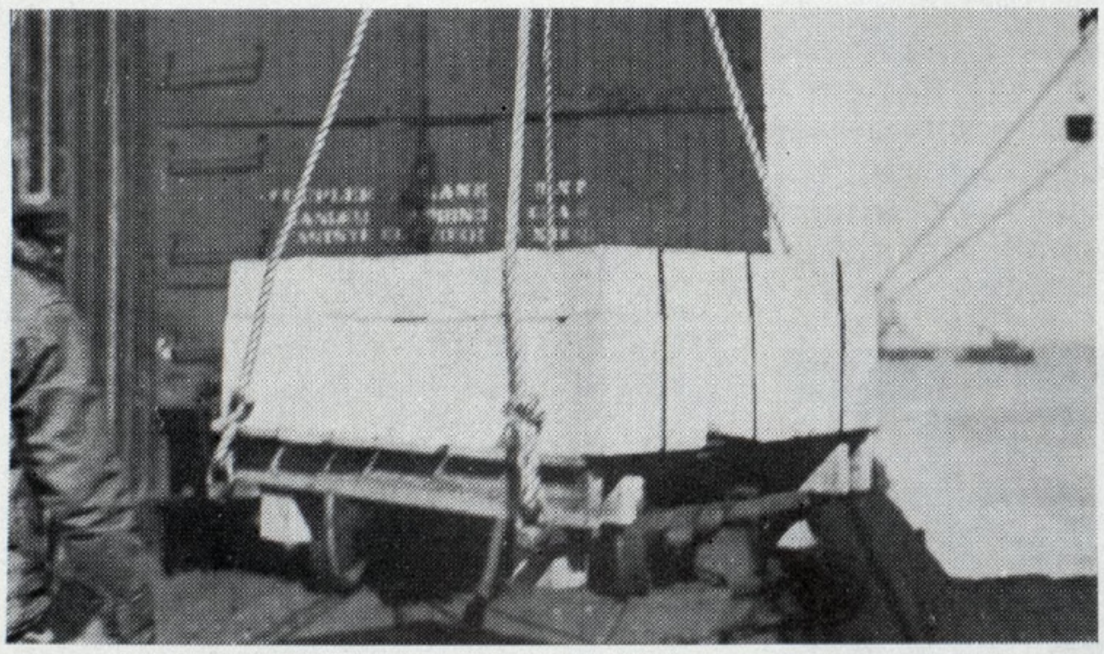
Because of the economy which results in handling larger units, some men have planned ships which are equipped with cranes of various types for handling cargo in containers similar in general design to the less than carload lot containers used by some railroad companies. Boris Stern described a portion of this plan at the 1930 meeting of the Society of Naval Architects and Marine Engineers, as follows:

"Much more, however, can be accomplished by having the ship operator and the shipbuilder tackle the problem from the point of view of the ship rather than the point of view of the commodity. I am not an engineer but I can fairly well visualize a ship equipped with a set of standardized containers especially built to fit the separate compartments of the ship and easily moved from those compartments to the hatches of the ship. The small pieces in bags or in boxes assigned to any one person or to any one part of the country could easily be loaded in a single container on the pier and not removed until they reach their destination. Such a scheme would reduce the operations of discharging and loading commodities to the handling of standardized containers, thus altogether avoiding the problem of sorting while the ship remains in port. The dispatch of the ship will then depend exclusively on the speed of the winches and the ability of the pier crew to remove the cargo containers from the apron of the pier."

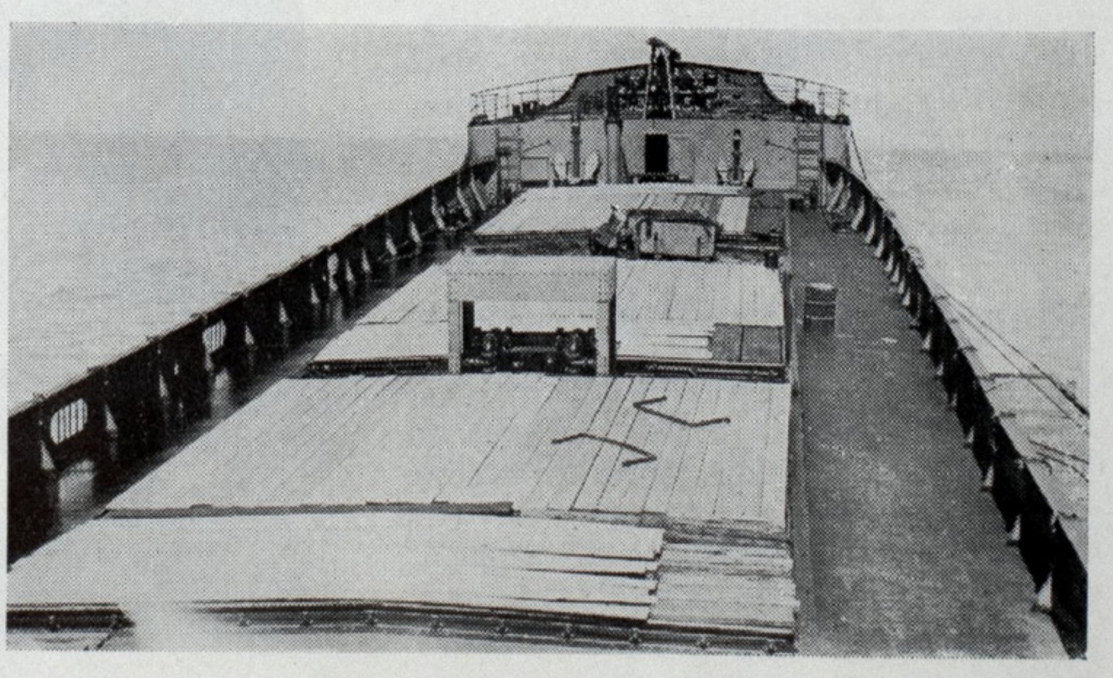
Must Consider The Cost

At this point it is advisable to consider the cost of obtaining larger handling units. The final objective is profit and increased tons per hatch hour or decreased terminal time must be considered in connection with the cost of obtaining such reduction.

A container ship may be a great accomplishment mechanically and reduce terminal time to a low point, but the real answer is found in the profits of the company which reflect the cost of obtaining these results.



Handling costs reduced by increasing size of unit, as in this case, by placing soapstone furnace blocks on skid platform



Terminal time of lumber carriers reduced by handling cargo in large units held together with steel stirrups

Marine Exhibition Opens at New York, Nov. 12

The first annual marine exhibition, to be held Nov. 12 to 24, under the auspices of the Maritime Association of the Port of New York, is rounding into shape with nearly half a hundred exhibitors pledged to Chairman A. R. Risso and his energetic associates of the committee on promotion.

Embraced in the list of exhibitors are many leaders among the shipbuilders, shiprepairers, ship operators and manufacturers of marine equipment. The displays will be of unusual interest from an educational and, in some instances, from a historical point of view and will attract many visitors to the spacious floors of the Maritime exchange at 80 Broad street.

No admission will be charged at any time during the exhibition; on the contrary, invitations and complimentary tickets will be widely distributed by the Maritime exchange, by exhibitors and various marine organizations, not only in New York but in other ports throughout the Atlantic states.

The Maritime associations of Philadelpria, Boston, Baltimore and Norfolk are cooperating in this manner to draw visitors from their territories among the marine superintendents, port captains, port engineers, purchasing agents and port stewards of American and foreign flag steamship companies. Special effort is being made also to stimulate attendance by the personnel of towboat and lighterage interests, river and canal transportation companies, railroads and public officials. The steamship companies of New York have arranged to supply complimentary tickets to the deck and engine room officers of all their vessels in port during the show.

The exhibition will be open daily until 10 p.m., except Sundays.

A varied program of daily events will lend continuing interest and doubtless will make it a meeting place for men engaged in all phases of the marine industry's work.

Many desirable units of exhibit space are available and reservations are expected in considerable number by the committee on promotion and organization, of which A. R. Risso is chairman. The committee's headquarters are established at the Maritime exchange, 80 Broad Street, New York City, and complete information regarding any phase of the exhibition may be had by inquiry there.

Manhattan Speed Record

The United States liner, MANHATTAN, set a new speed record on Oct. 16 when arriving at Cobh from New York in 5 days, 6 hours and 19 minutes. The MANHATTAN is the first American-built passenger vessel to set a record for a north Atlantic crossing. The MAURETANIA in 1910 made the all-time record for the New York-Cobh run in 4 days, 10 hours and 41 minutes, averaging 26.06 knots as compared to 22.78 knots for the MANHATTAN. The MANHATTAN's top speed after her maiden voyage was estimated at 24 knots.

American Red Cross

Men of the merchant marine, owe to the Norwegian Red Cross the initiative in the matter of a program planned to safeguard the health and welfare of sailors in every port; and they owe to the League of Red Cross Societies the coordinated program which was recommended at two international conferences on the health and welfare of merchant seamen.

Through these two conferences, and the machinery developed to put the program into practical effect, those interested hope for a continued improvement in housing and health conditions, as well as in facilities for recreation, in all the world's ports.

The Red Cross gives effective assistance through a standing committee on welfare of seamen which is a part of the League of Red Cross Societies, through the special program of the Swedish Red Cross, the Netherlands Red Cross commission for the welfare of the merchant marine, and through the program of the German Red Cross. Other societies in maritime countries are adopting programs which look to better recreation and housing for seamen on shore in strange ports. When another international conference is called the reports of all these countries will reveal that Red Cross organizations all over the world are taking an increasing interest in the men of the merchant marine.

Last year's high seas roll call enrolled 9571 men of the merchant marine, many of the vessels reporting a hundred per cent enrollment.

Lincoln Awarded Medal by Welding Society

The Samuel Wylie Miller medal of the American Welding society was awarded to John Cromwell Lincoln, chairman of the board, the Lincoln Electric Co., Cleveland, in recognition of his great contributions to the advancement of the science of electric fusion welding.

Mr. Lincoln is one of the early pioneers in arc welding, and has devoted most of his life to research and development of the electric arc as an industrial tool. He was born July 17, 1866, in Painesville, O., and received his elemenetary education there, later attending Ohio State university where he received a degree in electrical engineering.

In 1888 he joined the staff of Charles F. Brush, inventor of the arc light, and gained experience with the phenomena of the electric arc. Later he became affiliated with the Elliott-Lincoln Electric Co., one of the pioneer manufacturers of electric motors, and in 1896, with this company as a nucleus, he formed the present Lincoln Electric Co., Cleveland.

In 1907, the Lincoln company produced the first variable voltage arc welding machine, and two years later, as a direct result of Mr. Lincoln's efforts, the first redesign of a cast iron product for arc welded steel construction was made.

In 1916 Mr. Lincoln was the first to bring the electric arc into the structural field, directing the application of the process in the remodeling of an industrial structure.

In conjunction with the United States government, he established the first school for training welding operators in 1917, and has since that time conducted this school, giving thorough instruction to many thousands of students.

Mr. Lincoln made another contribution to the arc welding field when the first motor was completely redesigned from cast iron to arc welded steel construction.

His greatest single advance in the art of welding, however, was in 1929 when his company introduced the first practical shielded arc.

Arthur J. Grymes Sr. Dies

Arthur J. Grymes Sr., president of Brewer Dry Docks Corp. and of the Grymes Engineering Co., died at his Jersey City home on Sunday, Oct. 7, in his sixtieth year.

Mr. Grymes was at one time chief of the Erie railroad's marine department and, after leaving the railroad field, founded the Vulcan Iron Works. He had many interests, both marine and general business, and was a member of the Maritime exchange, Transportation club, Whitehall club, and numerous other organizations.

Useful Hints on Cargo Handling

MOST forms of bills of lading in use today contain clauses stipulating that notices of loss or damage must be given the shipowner within a specified time after delivery of the goods or of apparent damage before delivery. The bill of lading also limits the time for filing formal claim and for bringing suit against the carrier. Failing compliance with these time limitations, it is stipulated that the claimant is barred from recovery against the shipowner.

The courts have upheld the right of the carrier to make these reservations if the time specified in the bill of lading is reasonable, and many cases have been decided in the ship's favor on the ground that no notice was given within the time specified, or suit was not filed until after expiration of the bill of lading suit time, without going into the merits of the claim at all.

In reviewing various claim files submitted it has been observed that frequently full advantage has not been taken of the defenses afforded by the time clauses of the bill of lading. While in some instances it may be desirable to waive the time limitations as a matter of policy, this does not apply to all cases, and it is well to keep this point in mind.

Deck Protection

A SHIP'S carpenter aboard one of the older vessels berthing regularly in New York harbor experienced some difficulty with the deck planking immediately below joints in the steam pipes leading to the cargo winches. Occasional leakage and condensation caused the planks to rot, necessitating their frequent replacement.

He overcame this difficulty by shaving half-way through the rotted planks, and then building a cement patch flush with the planks on each side. Whenever a leak occured at such spots in the future the water fell on the cement, from which it ran off over a greater area. This reduced considerably the number of plank renewals.

Covering Winch Drums

QUITE a bit of wear and tear on the drums of ship winches could be eliminated by covering the drum with strips of iron-wood, set tightly together and bound around with strong wire. This wood, which wears like iron is good for several years before replacements are necessary. The ironwood should be purchased cut to fit as it can best be worked by means of power saws.

THIS page is being devoted to short items on all matters having to do with the more efficient turnaround of ships. These items are intended to be of a helpful nature.

We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.

Manila Rope Slings Used

A CONTRACTING stevedore uses manila rope slings rather than chain or wire for loading gas line pipe. This pipe is covered with paraffine wax and must be handled with more care than other kinds of pipe to avoid scraping the wax from the pipe. The rope sling consists of a rope pad or mat formed to receive the ends of the three pieces of pipe handled in a slingload. A rope leads from the pad to a point about two thirds of the way up the pipes where the rope is secured around the pipe in the usual manner and then the rope goes to the ship's fall.

By means of the pad which is held securely in place by the above arrangement the ends of the pipes are protected against damage by striking the deck of the lighter or the side of the ship. The use of manila rope for slinging the pipes instead of wire rope prevents undue scraping of the paraffine wax so that complaints by the shipper have been avoided entirely.

The hatch covers on a ship visited recently were in poor condition. They were broken and splintered and some were too short. When working cargo in the 'tweendeck the longshoremen were constantly in danger of injuring themselves by stepping into one of the spaces between the covers or even of falling into the hold.

The interior of a pier painted with aluminum paint has a neat appearance and is lighter than a pier painted with paint which reflects less light.

A large steamer in the intercoastal trade has hatch covers for number 3 hatch in two sections. The small individual covers are secured together, one set for each side of the hatch. These sectons are taken off and put on with the ships gear.

Survey of Cargo Damage

THERE seems to be some difference of opinion as to when a survey of cargo should be attended by a representative of the vessel.

There are many classes of cargo damage for which the vessel is not liable under the terms of the bill of lading, such as damage resulting from perils of the sea, sweat damage not resulting from negligence in stowage or failure to provide proper ventilation; damage resulting from errors in management of the vessel, etc.

Frequently it is impossible to determine at the time cargo is discharged and ready for delivery to consignees, the exact cause of damage. In such cases, where exceptions are noted by the receiver in the receipts given to the carrier, it is recommended that a survey be held before delivery of the cargo, at which both the cargo interests and the vessel are represented, to determine, without prejudice to the question of liability, the nature of the damage and the amount of damage existing at the time the cargo leaves the custody of the carrier.

This enables the carrier to fix the amount of damages for which it may be liable if subsequent investigation discloses evidence of negligence or unseaworthiness.

Carrying Frosted Foods

FROSTED foods have been carried from the Pacific coast to New York in intercoastal ships fitted with refrigerator facilities. Frosted foods are prepared by quick freezing down to a temperature of 40 to 50 degrees below zero. As far as practical they are kept at sub zero or a little above zero while being transported to the market. It is expected that the superior flavor of frosted foods will result in an increasing movement of this kind of cargo as production is increased.

Up and Down the Great Lakes

Decrease in Traffic—Drafts Allowed—Lake Levels—
Less Ore Shipments—Canadian Grain—Coal Steady

THERE was a considerable reduction in freight through the Sault Ste. Marie canals, United States and Canadian, during the past month of September as compared with same month in 1933. This year, in that month, 6,125,424 tons passed through as against 8,453,292 tons in September, 1933. The amount for the month of September, 1932, however, was only 3,806,723 tons. Iron ore shipments for September, 1934, amounted to 3,508,432 tons or 2,083,375 tons less than for the same month in 1933. Wheat amounted to 26,226,593 bushels as compared with 33,033,139 bushels in September last year. Other grains, however, increased to 4,471,562 bushels from 2,662,493 bushels last year.

Traffic through the Welland ship canal during September amounted to 1,170,816 tons or 201,526 tons less than the total of 1,372,342 tons for September, 1933. Wheat decreased by 236,078 tons or 7,869,266 bushels and was only slightly over half the tonnage for September last year. Corn decreased from 38,165 tons in 1933 to 11,584 tons, cement, brick and lime was lighter by 18,235 tons, flour by 8592 tons, iron and steel by 8485 tons and merchandise by 22,774 tons. The total traffic through the Welland ship canal from the opening of navigation in April to September 30 was 6,504,930 tons in 1934 and 6,641,035 tons for the same period in 1933.

Freight through the St. Lawrence canals during September decreased from 1,129,176 tons in 1933 to 924,-103 tons. To account for this the main factors were light shipments of wheat and sand. Wheat decreased from 415,280 tons in 1933 to 218,-589 tons, and sand decreased from 53,327 tons to 4493 tons. Flour also decreased by 5712 tons and pig iron 4739 tons. Barley increased from 3966 tons to 37,210 tons. Pulpwood increased by 25,426 tons and bituminous coal by 49,569 tons. Total traffic from the opening of navigation to Sept. 30 amounted to 4,701,-519 tons and 5,129,908 tons in 1933.

Lake Loading Drafts

Early in October the permissible loading drafts on the Great Lakes were as follows: 19 feet for St. Mary's river downbound to Lake Michigan or Lake Huron including Georgian bay, subject, of course, to the draft available in the particular port of call; 16 feet, 9 inches in the Black Rock canal and channel to Tonawanda; 17 feet, 9 inches for St. Mary's river downward to points below Sarnia; 17 feet, 6 inches for St. Mary's river upbound; and 17 feet, 9 inches for St. Clair river.

September Lake Levels

The United States Lake survey reports the following monthly mean stages of the Great Lakes for the month of September, 1934, determined from daily readings of staff gages.

Lakes	Feet above mean sea level
Superior	602.87
Muchigan-Huron	577.90
St. Clair	573.16
Erie	570.15
Ontario	243.32

Lake Superior was 0.09-foot higher than in August and it was 0.03-foot alove the September stage of a year ago.

Lakes Michigan-Huron were 0.08-foot lower than in August and they were 0.30-foot below the September stage of a year ago, 1.45 feet below the average stage of September of the last ten years.

Lake Erie was 0.15-foot lower than in August and it was 0.88-foot below the September stage of a year ago, 1.61 feet below the average stage of September of the last ten years.

Lake Ontario was 0.31-foot lower than in August and it was 1.04 feet below the September stage of a year ago, 2.16 feet below the average stage of September of the last ten years.

Canadian Grain Shipments

From Sept. 15 to Oct. 14 inclusive, shipments of grain from Fort William and Port Arthur, Ont., via lake vessels were as follows: Wheat to Canadian lower lake ports, 9,630,-516 bushels. to Montreal, 1,560,119 bushels; to other Canadian ports, 643,441 bushels. to Buffalo, 8,192,-519 bushels; and to other United States ports, 1,677,986 bushels. This makes a total of 21,704,581 bushels of wheat shipped via lake vessels from Fort William and Port Arthur from Sept. 15 to Oct. 14.

During the same period oats moved from the same ports in the following quantities: To Canadian lower lake ports, 121,000 bushels; to Montreal, 25,000 bushels; to Buffalo, 169,530 bushels; and to other United States ports, 383,013 bushels. The movement of barley was as follows: To Canadian lower lake ports, 337,488 bushels; to Montreal, 178,-946 bushels; to Buffalo, 132,272 bushels; and to other United States ports, 880,000 bushels. The only rye moved was 97,000 bushels to United States ports other than Buffalo. During the same period, 55,626 bushels of flaxseed moved to Canadian lower lake ports. Only 730 tons of screenings to Buffalo and 4342 tons of screenings to other United States ports were moved.

The grand total in all kinds of grain shipped via lake vessels from Fort William and Port Arthur from Sept. 15 to Oct. 14, both inclusive, was 24,084,466 bushels and 5072 tons of screenings.

Ore Shipments Less

During the month of September ore shipments from upper lake ports decreased by 37.51 per cent from the amount shipped in that month in 1933. The total amount shipped amounted to 3,439,375 tons as compared with 5,504,175 tons during September, 1933.

Ore shipments for the season up to Oct. 1, 1934, amounted to 19,125,586 tons as compared with 16,301,573 tons for the season of 1933 up to Oct. 1. This is an increase for 1934 of 2,824,013 tons or 17.32 per cent over the same period of 1933.

The decrease in ore shipments during September, 1934, from the shipments in the same month in 1933 amounted to 2,064,800 tons or 37.51 per cent.

Shipments of ore by rail from Lake Erie ports to furnaces during the month of September amounted to 1,-414,050 tons, making a total for the season up to Oct. 1 of 9,694,508 tons as compared with a total shipment of 9,095,972 tons for the same period in 1933. On Oct. 1, 1934, the balance of ore on dock at Lake Erie ports was 5,200,825 as compared with 5,033,573 tons on Oct. 1, 1933.

The express liner EUROPA on arrival in New York Oct. 22 carried 1115 passengers.

Illinois Waterway Traffic Shows Increase

When the new bridge over the Illinois river at Morris, Ill., was dedicated and officially opened on Sept. 20, it marked the removal of one of the last obstacles to large-scale barge operations on the Illinois waterway. Providing a clearance above the water of 47 feet, it enables the largest river barges and boats to traverse this section of the stream. The 78-year old bridge which the new structure replaces had only a 16-foot clearance and made necessary the use of special towboats in order to permit freight movement beyond this point. Morris is 25 miles below Joliet, Ill., and 65 miles from Chicago's lake front.

Traffic on the Illinois waterways system already this year has shown a substantial increase and this additional aid to through traffic is expected to be reflected in a further gain in the movement. During the first seven months a total of 141,351 tons of freight was recorded for the upbound and downbound traffic on the section of the Illinois river extending 231 miles between Utica and Grafton, Ill., at which latter point it joins the Mississippi. This compares with 73,691 tons during the corresponding 1933 period. Over the 60 miles of the Des Plaines and Illinois rivers between Utica and Joliet, Ill., shipments totaled 73,606 tons, against 9445 tons a year ago.

Heavy Traffic Anticipated

Inland Waterways Corp. officials hope that eventually the Illinois system will carry 5,000,000 tons of freight. While the stream itself has been capable of accommodating heavy traffic for some time, low bridges have been a bar to active shipments. The old Morris bridge could accommodate only one barge at a time, making it necessary to break up tows of two, four or six barges, and, in addition, prevented the usual type of towboat from traversing farther north than that point. The Chicago sanitary and ship canal, extending 30 miles at the northern end of the system, still presents an obstacle to traffic into Chicago in the form of 20 bridges that were built as movable structures but in which necessary operating machinery has not yet been installed. This work is a legal obligation of the Sanitary District of Chicago, which is without funds at this time. The lowest clearance of any of these bridges is about 16.5 feet above ordinary low water. Due to the low level of Lake Michigan this year the clearance has been somewhat larger.

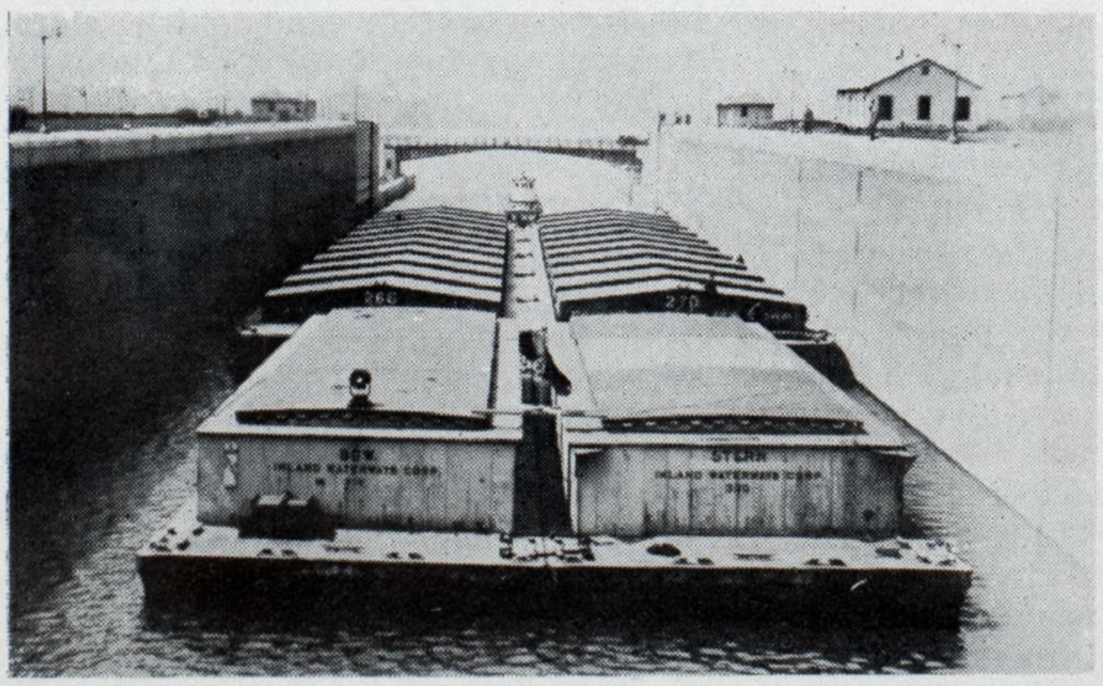
As now constituted the Illinois waterway system is made up of 6 miles of the Chicago river, 30 miles of the Chicago sanitary and ship canal, 60 miles of the Illinois waterway, consisting of the Des Plaines and Illinois rivers, and 231 miles of the Illinois river—a total of 327 miles. Minimum vertical clearance on all but the canal section since the opening of the new Morris bridge is 44 feet.

Minimum channel depth of the system to the Mississippi river at Grafton, Ill., is 9 feet. A similar minimum depth is encountered by the navigator on the Mississippi between Grafton and Baton Rouge, La., while the ship channel from Baton Rouge to the Gulf of Mexico is able to accommodate large ocean-going vessels. The lakes-to-gulf artery consequently now is in a position to handle large tows and substantially heavier traffic.

Principal commodities carried on the Illinois system recently have been grain, sugar, coal oil, gasoline, sand and gravel, cement, pig iron and steel products in addition to a variety of manufactured products.

Capt. George H. Banker, for 33 years master of ships in the fleet of the Pittsburgh Steamship Co., died at his home, Lakewood, O., Oct. 12, at the age of 66.

He was twice mentioned for rescues on the Great Lakes. He was born at Harbor Beach, Mich., and began his career at the age of 17 with the United States coast guard. He joined the John W. Gates of the Pittsburgh fleet in 1900.



Towboat Wm. T. Warner of the Inland Waterways Corp. passing through Brandon Road Lock of the Illinois waterway with tow, about May 10, 1934

Coal Shipments Continue Over Last Year

Bituminous coal shipments via lake vessels from Lake Erie ports from beginning of the season up to 7 a. m., Oct. 15, amounted to 28,727,706 net tons of cargo and 931,054 net tons of bunkers giving a total of 29,658,760 net tons. This is an increase of over three and a half million tons above the same period last year and it is over 11,000,000 tons more than for the movement for the same period of 1932. It is also nearly three and a half million tons more than the movement for the same period of 1931. The figures were prepared by the Ore and Coal Exchange, Cleveland.

It may be noted that during the same period in 1933 cargo coal moved amounted to 25,195,582 tons and the bunker coal, 797,470 tons, making a total of 25,993,052 net tons. In the like period of 1932, cargo, bunkers and total bituminous coal shipments were respectively, 18,156,378 tons, 451,827 tons and 18,608,205 net tons. For the same period in 1931, cargo, bunkers and total were respectively 25,414,011 tons, 827,205 tons and 26,241,216 net tons.

Average shipments of bituminous coal for each of the four weeks ending 7 a. m., Oct. 15, totaled 1,051,628 net tons of cargo, and 33,626 net tons of bunker.

Anthracite coal shipments on the lakes for the season up to Oct. 1, amounted to 509,172 long tons, while for the same period in 1933 the amount was 276,828 long tons and in 1932, 214,297 tons.

Barge Canal System

Dates have been set for the closing of the several branches of the New York state canal system as follows: Erie canal, Nov. 30; Champlain canal, Nov. 30; Oswego canal, Dec. 3; Cayuga and Seneca canals, Nov. 20.

No boats will be permitted in lock chambers during the winter season. Owners of boats desiring to winter their craft in any part of the canal basin should first secure permission from R. D. Hayes, commissioner of canals and waterways, Albany, N. Y.

Succeeding Capt. Fred Meno, Detroit, who has been retired, Capt. Alvin A. Morrison, supervising inspector of the ninth district, also becomes acting supervising inspector for the eighth district. Captain Morrison is now in charge of the entire Great Lakes area for the United States steamboat inspection service.

Captain Meno who was retired on Sept. 30 had been for many years in charge of the eighth district with headquarters at Detroit.

Coast Guard Cutter Onondaga Standardization Trials

WHEN the ONONDAGA, (fully described in the October MARINE REVIEW), the first of two sister vessels built by the Defoe Boat & Motor Works, Bay City, Mich., for the United States Coast Guard, was completed, rather elaborate trials were conducted on Sept. 6, 1934, in Saginaw bay, Lake Huron. These trials consisted of a four-hour dock trial; a four-hour full power trial; and a series of standardization runs over a measured nautical mile.

The results of the standardization trials are given in the accompanying tabulation. Early on the morning of Sept. 6 before going out on the trials the draft of the vessel forward was 11 feet, 3½ inches; aft, 13 feet, 4 inches; giving a mean draft of 12 feet 3¾ inches. On board was 12 long tons of ballast, in the form of sand in sacks, located abaft the rudder stock. The total water on board was 23,860 gallons; total fuel oil was 41,799 gallons; and there was also 450 gallons lubricating oil, making a total of 41,799 gallons of oil. The displacement was about 1008 long tons. Persons on board numbered 112.

Conditions of the Vessel

After the trials, on returning to the dock at midnight Sept. 6, the draft of the vessel forward was 11 feet, 1¾ inches on the port side and 11 feet, 3¾ inches on the starboard side; the draft aft was 13 feet, 2¾ inches, giving a mean draft of 12 feet, 2¾ inches. The ballast was the same as going out. The total water on board was 22,930 gallons; the total fuel oil on board was 38,934 gallons, and the lubricating oil was 450 gallons, the same as going out, giving a total oil of 39,384 gallons. During the days trials, 930 gallons of water had been used and 2415 gallons of fuel. The displacement was about 996 long tons. The fuel oil gravity was 26 degrees Beaume, weighing 7.49 pounds per gallon. Fuel oil meter reading going out was 1190 gallons and the same reading at dock on return was 3580 gallons; the oil thus used according to the meter being 2390 gallons which was 25 gallons less than by soundings.

During the trials the wind was northeast with a force of 2-3. The weather was clear and the visibility good. The barometer recorded 29.61. The length of the course was 6080 feet or one nautical mile. There was a slight sea of about 3 feet. The course was laid direct into the wind, and is located in Lake Huron abreast of Point Aux Barques. The depth of water was from 21 to 23 fathoms, and the temperature of the water was about 63 degrees Fahr. The standardization trials covered a period of about 2½ hours.

Time from full speed ahead at 145 revolutions per minute to full speed astern at 145 revolutions per minute was 67 seconds; while the time from full speed ahead at 145 revolutions per minute to stopping the propeller was 17 seconds. Time from stop to 145 revolutions per minute astern was 50 seconds and the time from stop to 100 revolutions per minute astern was 30 seconds. This test was made with 260 pounds pressure on astern belt and a vacuum of 27, 25.75 and 27 inches, and 275 pounds pressure on both boilers The time to stop the ship dead was 65 seconds and the time from hard over to hard over of rudder at full speed was 17 to 19 seconds. The time to heave in the first 15 fathoms of the 30 fathoms of chain and port anchor was 3 minutes and 16 seconds.

Onondaga Standardization Trials

		——Steam at Throttle——		
Speed	R. P. M.	Press.	Temp.	Vacuum
7.6	72.6	320	545	27.2
9.3	89.9	320	565	27.5
11.0	110.3	320	590	27.5
11.8	121.1	317	600	27.5
12.8	141.8	320	625	27.0

The ONONDAGA and sistership TAHOMA are single screw vessels propelled by a double reduction geared De Laval marine steam turbine with a rating of 1500 horsepower at 7500 revolutions per minute of the turbine and at a propeller speed of 140.

Steam for each of these vessels is supplied by two Babcock & Wilcox marine watertube boilers operated normally with a steam pressure at the superheater outlet of 310 pounds per square inch and with 200 degrees Fahr. superheat. Each boiler is fitted with three Babcock & Wilcox Cuyama type oil burners.

Marine Safety Efforts

Meetings of the marine section of the National Safety council at the twenty-third annual safety congress in Cleveland, Oct. 2-4, were very well attended and all of the papers presented were of unusual interest. Titles of the papers were noted in the October issue of MARINE REVIEW.

The new officers elected for the marine section for 1934-35 are as follows: General Chairman, E. W. Fiske Jr., Socony Vacuum Transportation Co.; vice chairman, Robert F. Hand, Standard Shipping Co.; vice chairman in charge of publicity, Arthur M. Tode; vice chairman for the Pacific coast, A. O. Woll, General Petroleum Corp.; secretary, John S. Hunter, The Atlantic Refining Co.; and news letter editor, Henry Blackstone.

Plaques were awarded for the best showing in safety campaigns as follows: Liners division, Lykes Dixie Mediterranean line, 311,676 hours with one injury; tankers division, The Atlantic Refining Co., 918,032 hours with four injuries; harbor equipment division, Erie Railroad Co., 655,480 hours with no injury; stevedoring division, New England Steamship Co., 644,747 hours with nine injuries; shipbuilding and repair division, New York Central Railroad Co., marine department, 111,896 hours, no injuries. Other companies were mentioned in each division for exceptional safety performance and were awarded certificates.

Queen Mary Launched

(*Continued from Page* 10)

Oil fuel is carried in side bunkers in way of the boiler rooms. The total capacity for fuel oil is 6300 tons. The operation of bunkering, through six filling stations, can be carried out in eight hours and without interfering with the storing of the ship or the embarkation of passengers. When called, for the vessel will be able to arrive in port, disembark passengers, restore, refuel and, embark passengers and proceed on the next voyage after only 12 hours.

An installation of three cylindrical boilers with a working pressure of 250 pounds per square inch is provided for supplying the auxiliary and hotel service requirements. These boilers supply superheated steam to three 1300 kilowatts single reduction geared turbine driven, 220 volt, direct current generators in a separate power station. They generate the electric current for lighting, electric heating, cooking, motor driven ventilating fans and engine and deck auxiliaries.

Passenger Accommodation

Accommodations will be provided for first, tourist, and third class passengers. Including the number in the crew, accommodations will be provided for over 4000 persons.

First class accommodations are provided in staterooms on the upper promenade, A, B and C decks. The rooms are single and two-berth cabins and the great majority are outboard rooms with natural light and ventilation. On A and B decks, amidships, sections of the accommodations are arranged in suites, comprising sitting room, bed room, servant's room, box room and private bathroom. Other accommodations of special rooms may also be arranged.

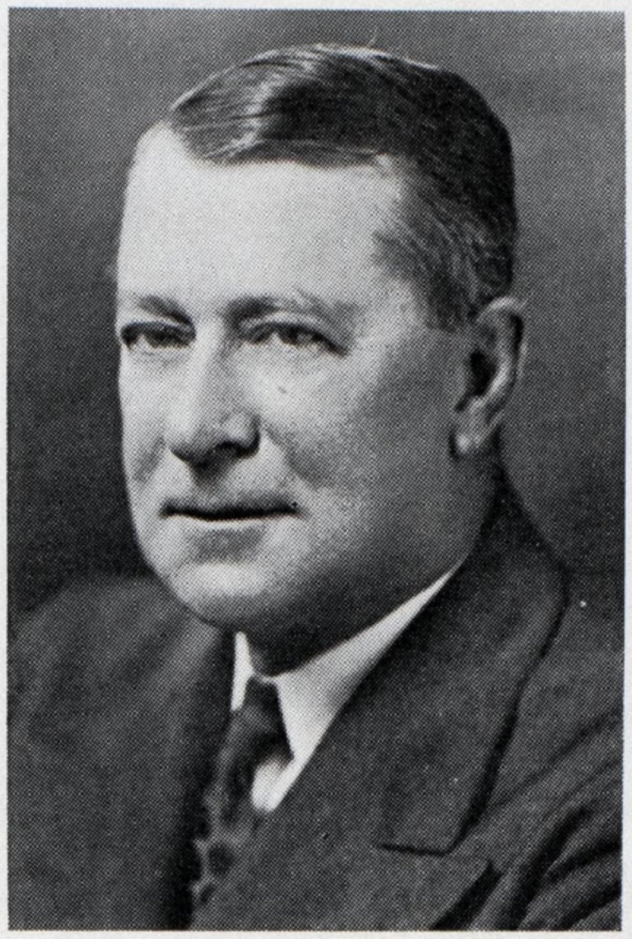
Personal Sketches of Marine Men

Joseph B. Weaver, Director, Bureau of Navigation and Steamboat Inspection

IN HIS appointment, recognition has been given to technical training and broad experience in shipbuilding and ship repairing.

HE IS the first director of the bureau which is a consolidation of the former bureau of navigation and the steamboat inspection service.

HE WAS graduated from Cornell university with a degree in mechanical engineering, specializing in marine engineering and naval architecture.



ON SEPT. 22 Joseph B. Weaver was appointed director of the bureau of navigation and steamboat inspection, department of commerce, by Daniel C. Roper, secretary of commerce. What is now the bureau of navigation and steamboat inspection was formerly two separate units, the bureau of navigation, headed by Arthur J. Tyrer as commissioner and the steamboat inspection service, headed by Dickerson N. Hoover as supervising inspector general. The consolidation took place in August, 1932, but due to the pressure of other organization work no appointment of a director for this bureau was made until the present time. In the selection of a head for this bureau, Mr. Roper wanted a man with a thorough background and training as a marine engineer and naval architect.

No change will be made in the duties, responsibilities or position of Arthur J. Tyrer and Dickerson N. Hoover as assistant directors of the bureau.

Since Feb. 1, 1934 Mr. Weaver has served as deputy administrator for shipbuilding and shipping in the national recovery administration.

Mr. Weaver was born in Philadelphia in 1880. He was graduated from Cornell university in 1902 with a degree in mechanical engineering with special mention in marine engineering and naval architecture.

Upon graduation, he became a draftsman with the Newport News Shipbuilding & Dry Dock Co., and continued with this company until Jan. 1, 1917, when he held the position of general superintendent. He had been successively, assistant to the vice president, inspector of hull construction, assistant superintendent of hull construction, superintendent of hull construction and finally general superintendent of the entire plant.

During his service with the Newport News Shipbuilding & Dry Dock Co., in 1913, he made a survey for the Atlantic Coast Shipbuilding association to determine the differential between the cost of shipbuilding and shiprepairing in the United States and in foreign countries. He made a careful study of shipbuilding conditions in the yards on the Tyne in England, on the Clyde in Scotland. at Belfast, Ireland, and at Bremen, Hamburg, Kiel and Fleusberg in Germany.

Following his service with the Newport News Shipbuilding & Dry Dock Co., he became vice president and general manager of the Harlan & Hollingsworth Shipbuilding Co., Wilmington, Del. In the fall of 1917, when all the shipbuilding companies controlled by the Bethlehem Steel Co. were combined into a subsidiary organization known as the Bethlehem Shipbuilding Co., Mr. Weaver became general manager of the Harlan plant and a member of the central executive committee to operate shipyards.

In December, 1918 he became vice president of the Pullman Co. in charge of all technical matters, manufacturing and repairs, which position he held until Oct. 1, 1923 when he resigned to engage immediately in consulting engineering work.

In 1925 Mr. Weaver opened offices in London and New York, expanding his consulting engineering work, which required investigations and surveys in Norway, Sweden, Denmark, France, Germany, Portugal, Italy and Russia. As a consulting engineer, he devoted considerable attention to marine activities, shipping, trade agreements, and tariff and quota regulations.

On Feb. 1, 1934 he relinquished his work as consulting engineer to become deputy administrator for shipbuilding and shipping in the national recovery administration, which position he has now left to become the first director of the bureau of navigation and steamboat inspection of the department of commerce.

Regent, Twin Screw, Diesel Tanker Completed

THE twin screw diesel Tanker REGENT, built for the Gulf Refining Co. at the Sparrows Point plant of the Bethlehem Shipbuilding Corp. Ltd. and launched on June 22, was completed on Aug. 28 and has joined the Barge Canal-Great Lakes-coastwise fleet of the owners for service.

The new vessel, quite similar in design to the twin-screw diesel tankers HARMONY and SUPREME, built at the same shipyard in 1931, is substantially larger, however, and has a cargo capacity of 15,400 barrels, with bunker capacity of 40 tons. In contrast with the former vessels, which were 212 feet long by 37 feet beam by 13 feet 9 inches deep, the specifications of the REGENT are as follows:

Length overall, 255 feet; breadth molded, 40 feet; depth molded, 14 feet, 6 inches; length between perpendiculars, 247 feet; draft, in salt water, 12 feet, in fresh water, for canal operation, 9 feet, 6 inches. Gross tonnage is 1211 and the net tonnage is 708. The speed is 9½ knots.

Diesel Propelling Machinery

The tanker REGENT is propelled by twin screws, each connected to one McIntosh & Seymour, heavy duty, mechanical injection, direct reversing, six-cylinder diesel engine developing 425 brake horsepower at 280 revolutions. Total main propelling power in this vessel is, therefore, 850 brake horsepower.

For auxiliary power there are three diesel driven generator sets. Each generator of 50-kilowatt capacity, supplied by the Diehl Mfg. Co., is driven by a four-cylinder, 7-inch diameter, by 8½ inch stroke Atlas Imperial diesel engine.

The cargo pumps are of Waterous make and the bilge and general service pump was supplied by Carter. The windlass, winches and steering gear, were all supplied by the American Engineering Co. Bethlehem Steel Co. furnished the propellers and the refrigerating machinery was supplied by the Westinghouse Electric & Mfg. Co.

Machinery is located aft, and the forward bulkhead of this space is located 56 feet forward of the after perpendicular. Then comes the pump room which occupies the space across the vessel and 8 feet fore and aft. Forward of the pump room the hull is divided into five cargo oil tanks, each 28 feet, 5 inches in length fore and aft. Forward of No. 1 cargo oil tank is a 3-foot coffer dam. Forward of the copper dam is a dry cargo hold, 21 feet in length, with the forward pump room occupying 7 feet of the forward part of the hold down to a flat some 5 to 6 feet above the bottom of the ship. The fore peak is located forward of and is divided from the dry cargo hold by a collision bulkhead.

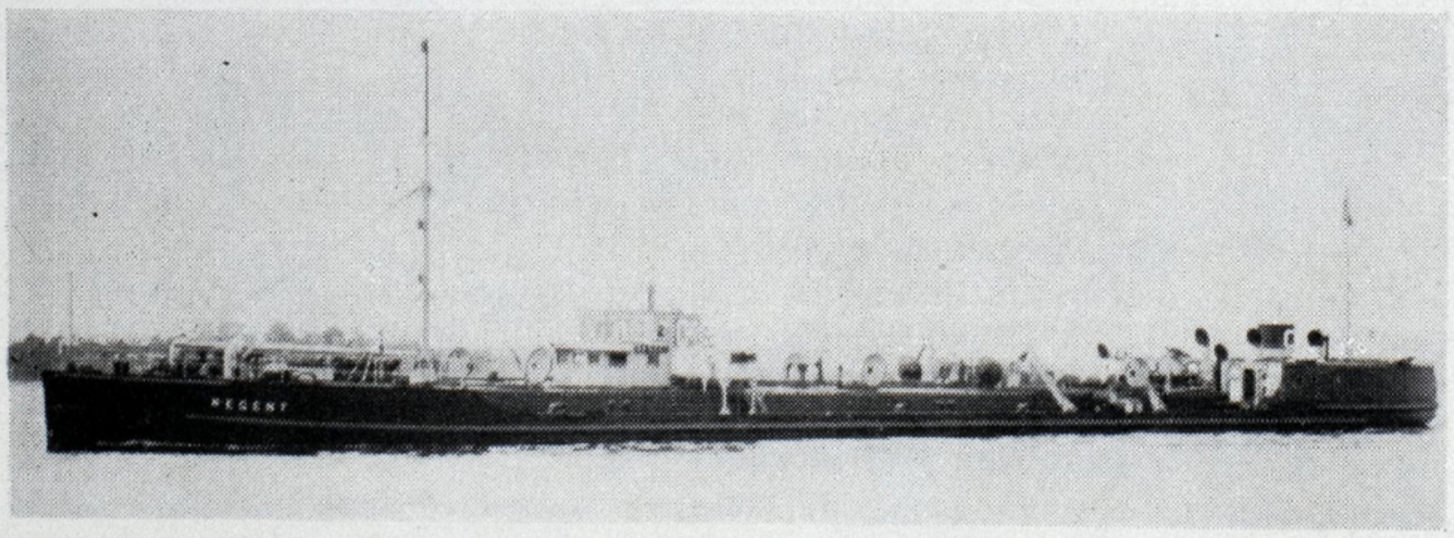
Has Minimum Clearance

All top gear on this vessel is so arranged that a maximum clearance of 13 feet, 9 inches over the canal draft of 9 feet, 6 inches can readily be arranged when operating under fixed bridges on the Barge canal. The accompanying profile illustration shows the general arrangement of the vessel.

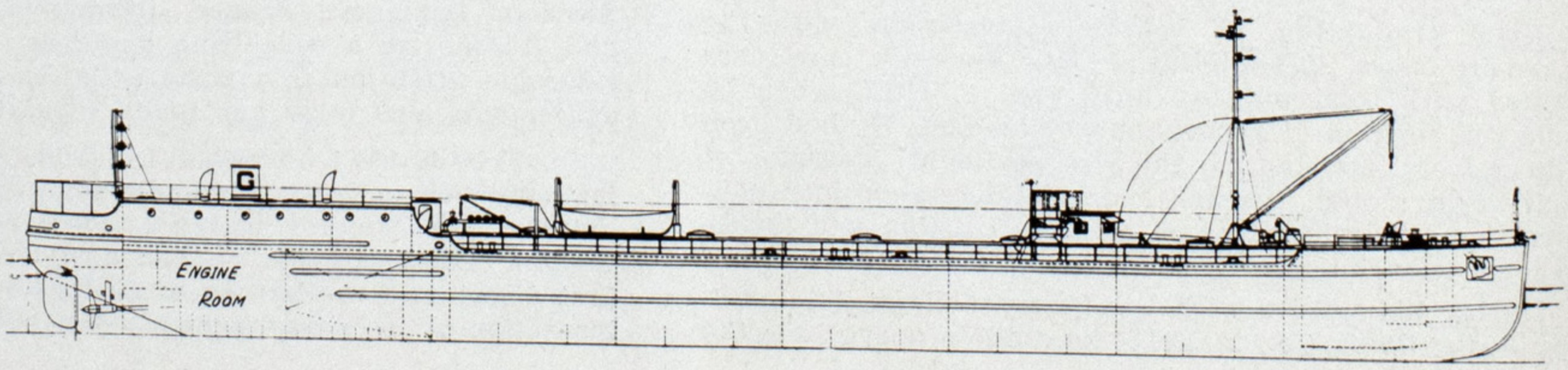
The new vessel, as is customary, was designed by the marine department of the Gulf Refining Co. and is classed by the American Bureau of Shiping. While there are no especial departures from the usual characteristic of her class, in the design of the vessel, a number of refinements have been introduced to improve the working of the ship. For example, a quick ballasting arrangement is provided which avoids a great deal of the lost time normally suffered on return voyages from canal points.

There are interesting features, too, in other items of equipment, such as the vertical windlass, designed by the American Engineering Co., to fit within an especialy small deck space; Welin davits of special design, supplied by Welin Davit & Boat Corp., providing extra long throw; a hinged mast for low clearance points; and a portable house arrangement, for use in coastwise service.

The REGENT is the sixth vessel in the Gulf fleet serving the New York state Barge canal, Great Lakes and coastwise points according to W. F. Jones, the company's marine superintendent, and practically reaches the ultimate allowable size for transit through the Barge and St. Lawrence canals, an increase made desirable by the growing "Gulf" business, inland and coastwise.



TWIN screw diesel tanker Regent, built by the Sparrows Point Plant of the Bethlehem Shipbuilding Corp. for the Gulf Refining Co.



Becomes Passenger Manager

James N. Findlay,, for 12 years assistant to the late Capt. C. M. Armstrong, has been appointed passenger manager of the Furness Bermuda line, New York city.

Mr. Findlay was born in Renfrewshire, Scotland, in 1894. In 1911 he sailed with Marconi International Marine Communication Co., and later joined the Canadian Northern Steamship Co. in the trade between Montreal and Avonmouth, England. He took part in the transportation of troops during the World war—across the English channel, into the Mediterranean, to the Dardanelles and the Near East fronts.

In the fall of 1916 Mr. Findlay left the sea, joined the British forces, and was sent to France in the radio division of the royal engineers, where he served until the end of the war.

At the end of the war, he joined the Furness lines, as assistant purser in the Bermuda, West Indies and Canadian services, and within a little over a year, he became assistant passenger manager.

World Shipbuilding Gains, More Ships Underway

A CONTINUATION of the trend toward greater production of merchant shipping throughout the world is shown by the returns of Lloyd's Register of Shipping for the quarter ending Sept. 30. Nearly 100,000 gross tons more of merchant vessels are now under way than in the preceding quarter. The returns cover all ships of 100 gross tons and upward being constructed in all countries except Russia.

Compared with a year ago, world shipbuilding shows an increase of more than half a million gross tons, a gain of nearly 75 per cent.

Of the 1,311,387 gross tons now being built throughout the world, 46.1 per cent is being constructed in Great Britain and Ireland, 1.7 per cent in the United States, and 52.2 per cent in the other shipbuilding countries, taken as a group. The comparison in construction during the past two quarters is given in the following table of gross tonnage:

	Sept. 30, 1934	June 30, 1934
Great Britain and Ireland	604,296	587,142
United States	22,225	27,581
Other countries	684,866	601,617
World total	1,311,387	1,216,340

Of all the merchant ships of 100 gross tons and upwards now being built in all countries, 966,690 gross tons are being constructed under the supervision of Lloyd's Register and are intended for classification with that society. This total includes 566,547 tons under way in Great Britain and Ireland, and 400,143 tons in the other countries.

Launchings Exceed New Orders

For the world, as a whole, tonnage launched during the quarter ended Sept. 30 was 44,000 gross tons in excess of replacements through new work begun in the quarter. Production in Great Britain and Ireland accounted for this showing, launchings there being 107,000 tons more than the volume of new work. For the other shipbuilding countries, taken as a group, however, new orders represented about 63,000 tons more than the aggregate of vessels launched.

How the new work begun and the shipping launched have compared during the past two quarters is shown by Lloyd's Register in the following tonnage table.

New Work

	Sept. 30, 1934	June 30, 1934
Great Britain and Ireland	76,011	146,653
Other countries	179,935	121,150
World total	255,946	267,803

Launchings

Great Britain and Ireland	183,077	35,828
Other countries	117,511	109,319
World total	300,588	145,147

Increase in the construction of steam and motor tankers of 1000 gross tons each and upward, is shown in the following table of gross tonnage:

	Sept. 30, 1934	June 30, 1934
Great Britain and Ireland	101,500	101,500
Denmark	44,100	34,950
Sweden	43,200	24,700
Holland	40,270	26,770
Germany	38,150	24,900
United States	19,842	23,400
Other countries	37,650	41,624
World total	324,712	277,844

Of the total of 324,712 gross tons of tankers now being built, 285,112 tons are motor vessels.

Increase in Motorships

Motorship construction generally showed a continued gain during the quarter just ended, the only decreases shown being for Italy and the United States. The increases ranged from 3600 gross tons to 15,800 tons for Germany. The motor tonnage being produced during the last two quarters is shown in the following table:

	Sept. 30, 1934	June 30, 1934
Great Britain and Ireland	291,517	279,632
Japan	120,350	116,680
Denmark	72,588	57,450
Sweden	64,425	49,025
Holland	64,100	51,330
Germany	59,401	43,600
Italy	37,000	46,700
United States	2,625	6,319

Motor vessels represent 58.3 per cent of all the merchant shipbuilding now under way throughout the world. This is a slight gain over the previous quarter. At present, 218,000 tons more of motor ships are being constructed than of all other types of vessels combined. At this time last year, motor vessels led by only 71,000 tons. A comparison for the last two quarters is shown in the following table of gross tonnage:

	Sept. 30, 1934	June 30, 1934
Motor vessels	764,909	692,535
Other types	546,478	523,805
Total	1,311,387	1,216,340

The trend toward motorized tonnage continues in Great Britain and Ireland. A year ago only about 28 per cent of the ship construction of these countries was represented by motor vessels, whereas the proportion has now risen to more than 48 per cent. Returns for all other countries, taken as a group, show that 67 per cent of their construction is being motorized, a reduction from the 72 per cent of a year ago.

The tonnage of various types building in these groups of countries at present are as follows:

	Great Britain and Ireland	Other Countries
Motor vessels	291,517	473,392
Other types	312,779	233,699
Total	604,296	707,091

A decrease in the total horsepower of oil engines being built or installed throughout the world is shown. For the quarter just ended the total was 729,469, for all countries, as against 817,499 indicated horsepower in the previous quarter. For Great Britain and Ireland, the decrease was from 276,311 to 249,940; for Japan, from 125,080 to 112,335, and for Germany, from 79,031 to 51,120. Sweden's total advanced from 74,642 to 82,732; but Holland showed a decline, from 69,700 to 61,537, and Italy, from 57,500 to 53,500. Denmark's figure alvanced from 48,580 to 50,100; but for the United States, there was a drop from 11,165 to 9005.

Gain in Steam Turbines

A gain was shown during the past quarter for steam turbines. The aggregate shaft horsepower of these under way in all countries is 616,389, as against 595,407 in the quarter ended June 30 last. For Great Britain and Ireland the total advanced from 308,380 to 314,880. France's total remained stationary at 224,300; while Germany showed a decline from 50,727 to 48,759.

In steam reciprocating engines, a decrease was shown in the quarter ending Sept. 30, the total for all countries dropping from 138,018 indicated horsepower to 122,698. For Great Britain and Ireland, the decline was from 94,528 to 87,673.

No change whatever was shown during the past quarter in the relative production ranking of the various shipbuilding countries. Great Britain and Ireland lead their nearest competitor, Japan, by a slightly greater margin than the 450,000 tons of the previous quarter.

The ranking and production of the various countries in the last two quarters is shown in the following table of gross tonnage:

	Sept. 30, 1934	June 30, 1934
Great Britain and Ireland	604,296	587,142
Japan	149,750	137,280
France	120,868	104,500
Germany	120,816	91,145
Denmark	74,938	66,650
Holland	70,735	54,765
Sweden	64,565	49,025
Italy	37,970	47,670
United States	22,225	27,581

As in the previous quarter, six large vessels, of 20,000 gross tons or more, are under construction, five in Great Britain and Ireland, and one in France.

Marine Review

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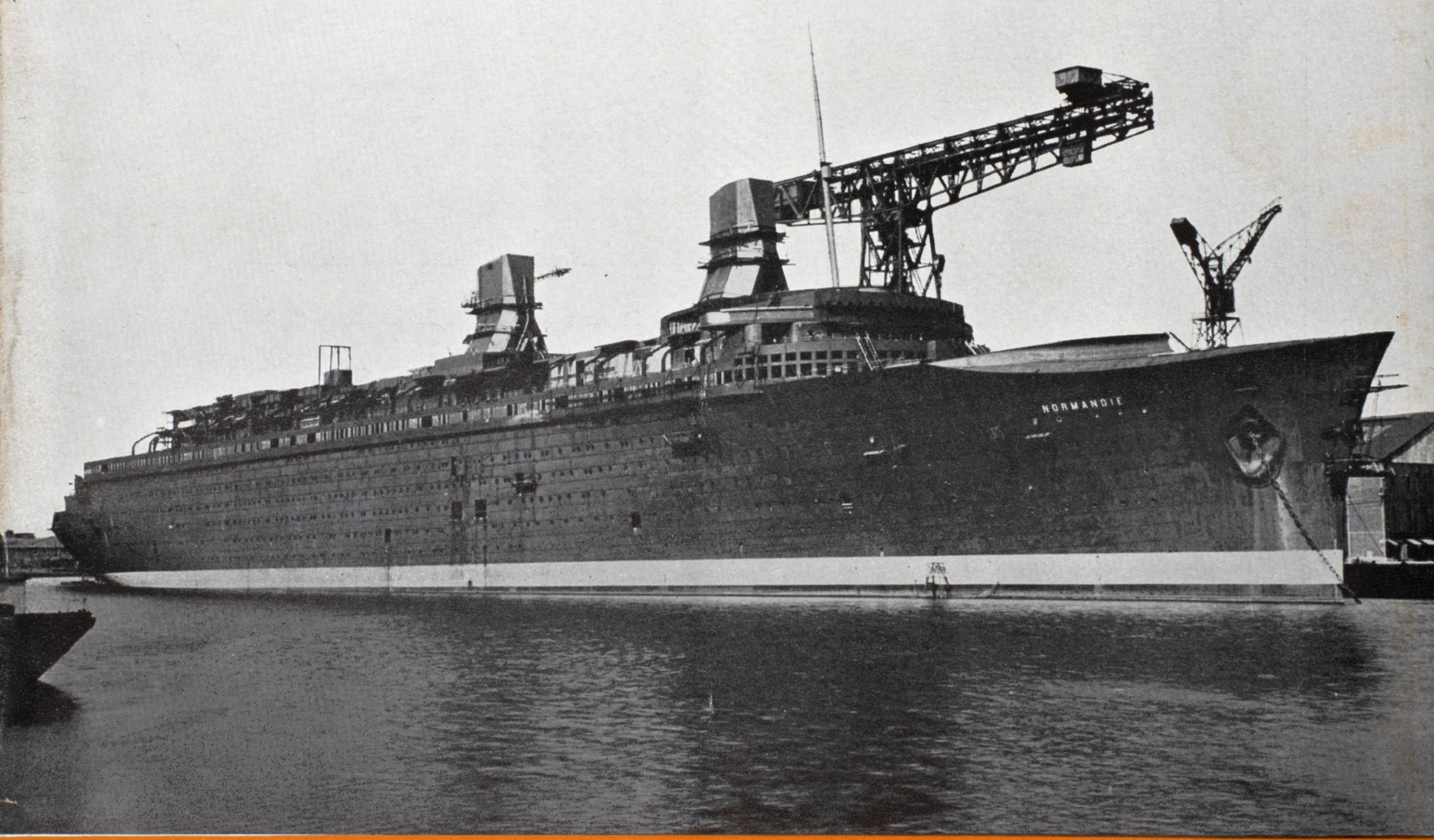
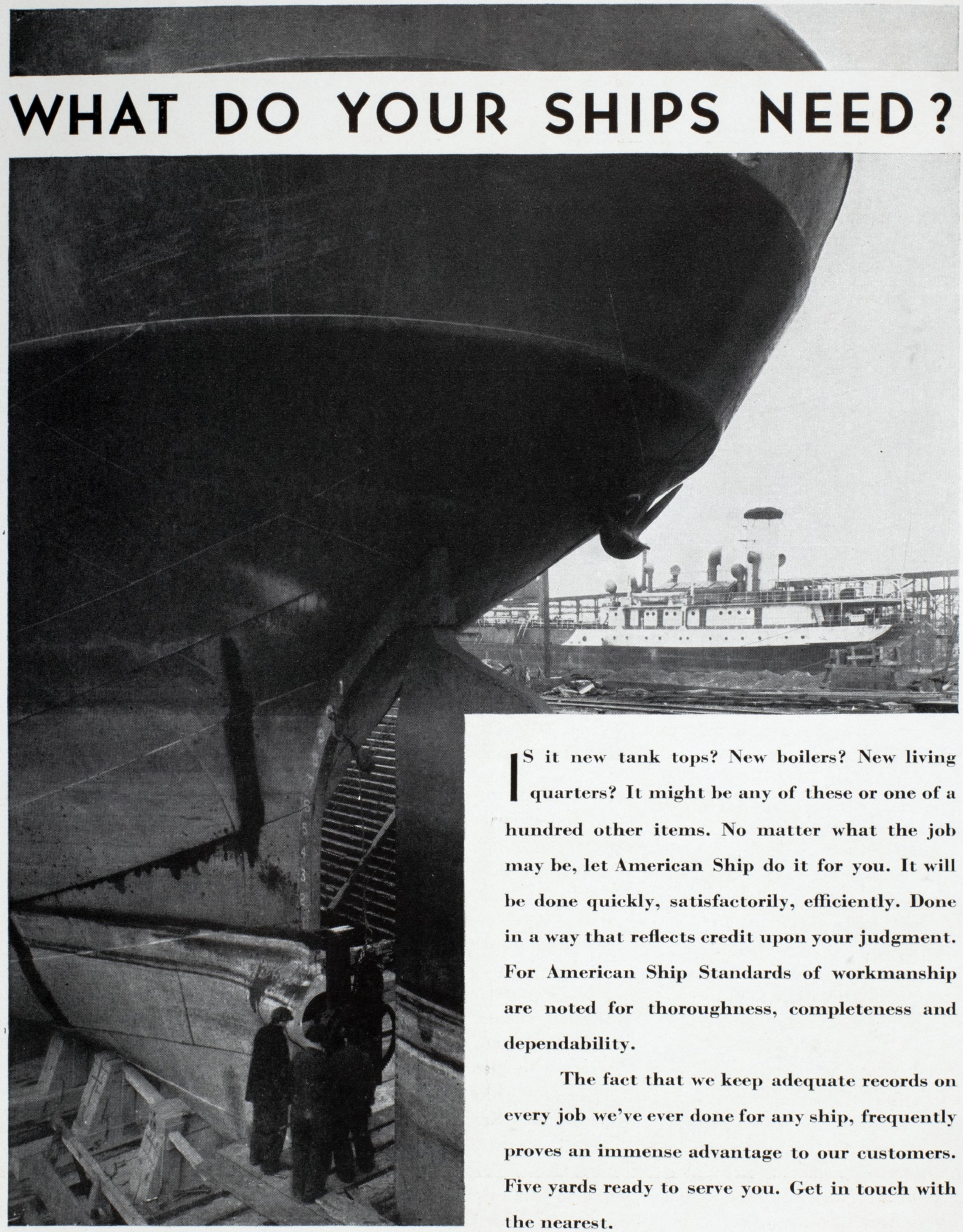
The National Publication Covering the Business of Transportation by Water



French Superliner Normandie

November, 1934

WHAT DO YOUR SHIPS NEED?



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Vol. 64, No. 11. November, 1934, issue of Marine Review, published monthly at Cleveland, O. Entered as second class matter at the post office, Cleveland, O., under act of March 3, 1879. Subscription price $3 a year in U. S.; Canada, $4; Great Britain and other foreign countries, £1. Single copies, 35c

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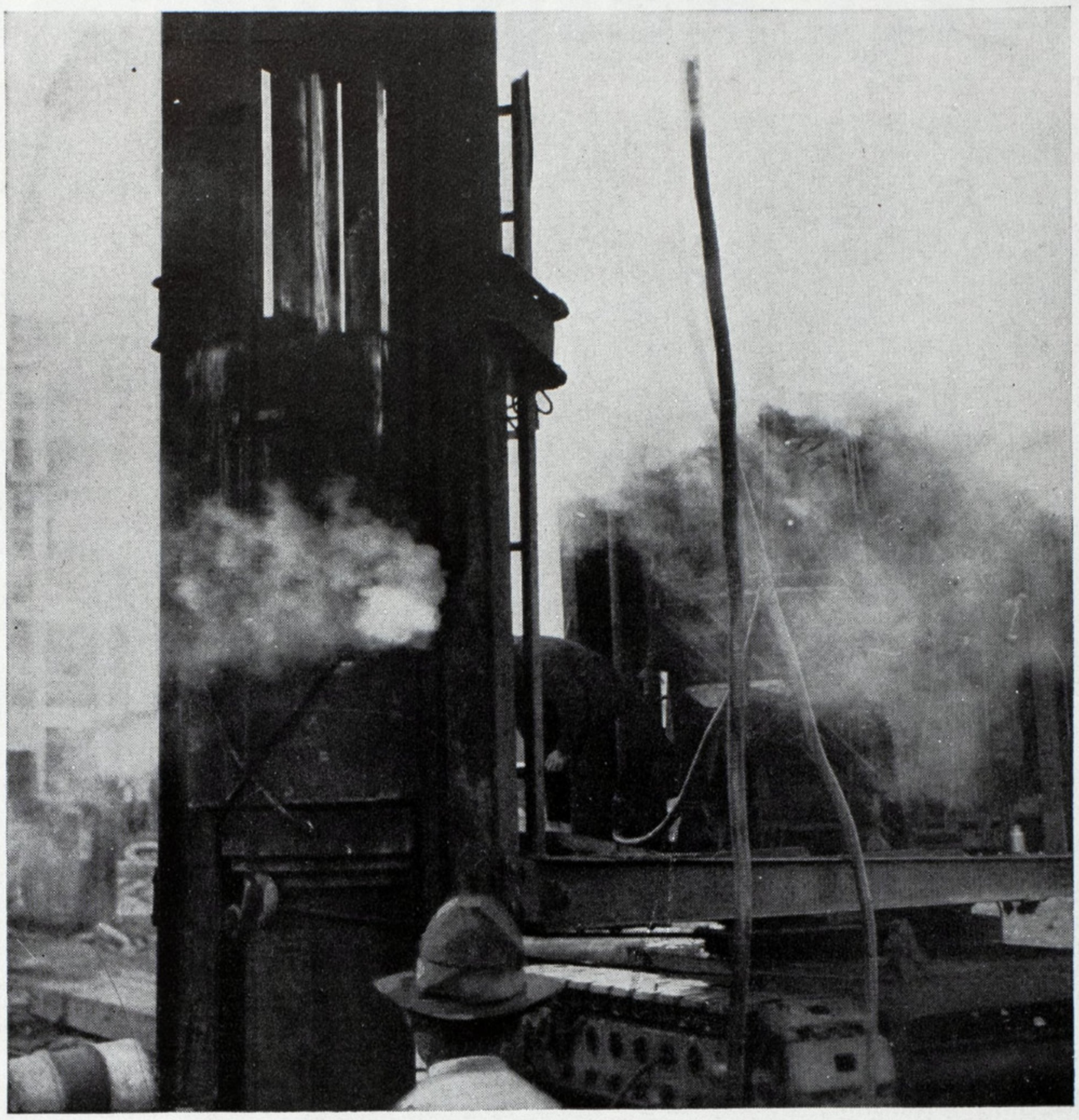

FULL STEAM AHEAD—Quick-time repair by bronze-welding fractured steam hammer cylinder saves money—cuts delay on job.

IT looked as if nothing could prevent the expenditure to replace the fractured steam hammer cylinder on the foundation company's pile driver.

A Linde Service Operator was called and, on examining the cylinder, found that it could be made as good as new by bronze-welding. With his cooperation the work was rapidly completed. The cost of materials and labor amounted to about $31—a saving of $354 over the cost of $385 for a new cylinder. Tests proved that the bronze-welded repair was fully capable of withstanding the severe service of everyday operation. The foundation company was highly pleased with the result.

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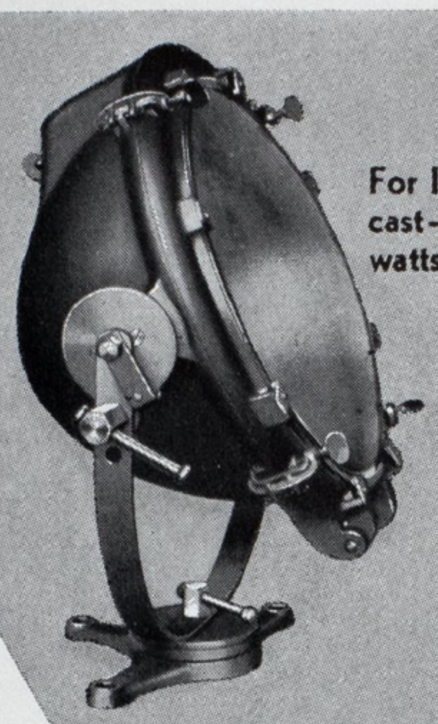

For large-area lighting; cast-aluminum, 1500 watts

For docks, loading platforms; open-type, up to 1500 watts

For construction work; copper-bronze, 1000 watts

Portable, for construction work; aluminum, up to 1000 watts

A portable light-weight Handy unit; 100/150 or 200 watts

FLOODLIGHTING is a money-saving method of lighting shipyards and ships to make night work possible. Floodlights are easily mounted—in many places two or three projectors on a tower or building top can light an entire dock or storage yard, without the cost of carrying the power supply to the spot where the light is needed. G-E floodlights are strongly built; they will stand up under hard usage; they are meant to be operated where weather conditions are severe. Let G-E floodlights speed up your work by giving you daytime safety, efficiency, and accuracy at night. The prevention of a single accident may more than pay for a year's operating cost.

THE 1500-watt cast-aluminum floodlighting projector is ideal for large-area lighting. For lighting loading platforms, docks, and completing work on superstructures the 1500-watt low-cost open-type floodlight will fill all your needs. On many other outdoor jobs the 1000-watt copper-bronze projector will be of greatest aid in construction. On work inside and outside the hull, the light-weight 1000-watt aluminum projector and the small Handy units for portable work will speed up production. These and other units are available with a variety of mountings to meet every situation. Let us send you our booklet, GEA-1865, G-E NOVALUX FLOODLIGHTING EQUIPMENT. Write to Dept. 6F-201, General Electric, Schenectady, N. Y.

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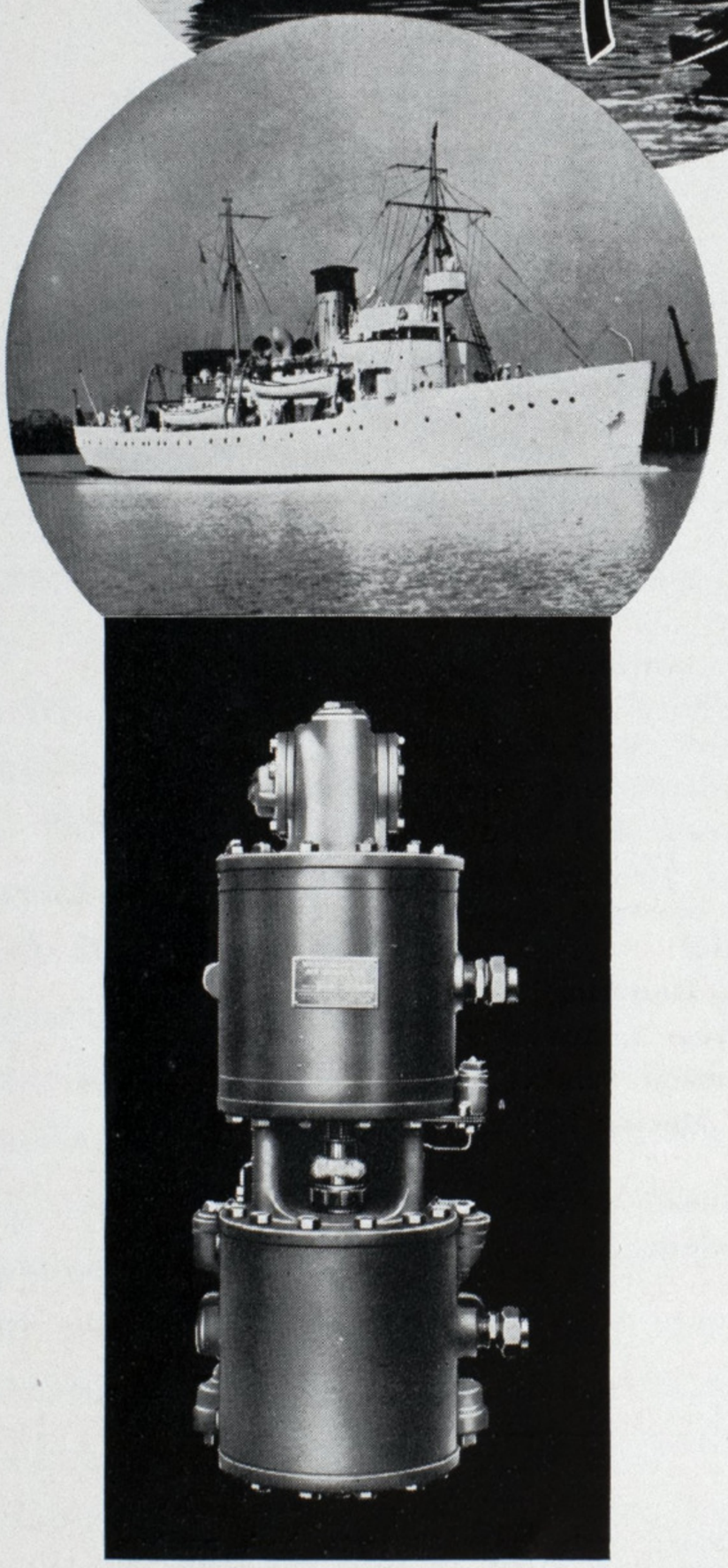

New Coast Guard Cutters have WESTINGHOUSE AIR COMPRESSORS

The new Coast Guard Cutters—Algonquin, Mohawk & Comanche, built by The Pussey & Jones Corp., and the Onandoga and Tahoma built by the Defoe Boat & Motor Works, are all equipped with the Westinghouse steam driven air compressor . . . . The air is used for operation of chipping tools, for cleaning purposes in the engine room and fire room, and for cleaning the guns . . . . This compressor is compact, durable, and reliable, ably suited for marine service. » » » » » » » » »

Westinghouse sixty-six cu. ft. water-jacketed steam driven air compressor

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Tom Sawyer, twin-screw Diesel tow boat owned by Inland Waterways Corp. and built by Midland Barge Co.

RIVER TOW BOAT, TOM SAWYER, IS EQUIPPED WITH EXIDE-IRONCLAD BATTERIES

The Tom Sawyer, new river tug boat for operation on the upper Mississippi, combines many unusual features. She is a twin-screw, tunnel stern type, equipped with two 8-cylinder Diesels. To reduce weight and draft, aluminum alloy is used in certain parts of her construction.

Her electrical system embodies new features also, including many auxiliaries. To insure the unfailing operation of this equipment, an Exide-Ironclad Battery is used. A 56-cell battery of 286 ampere-hour capacity at the 8-hour rate is floated on the main bus. The battery supplies current to the main bus at all times. When generator speeds drop below normal or under conditions of excessive load, the battery supplies the additional current.

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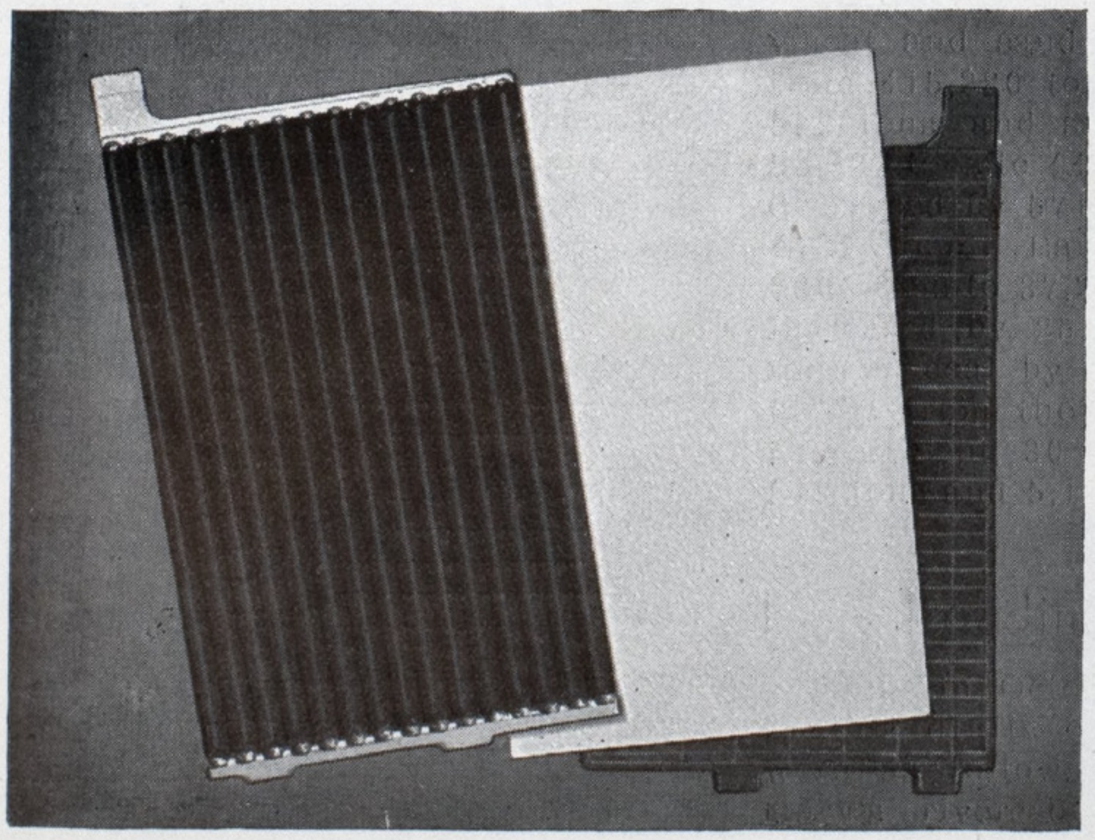

(Left) Exide-Ironclad Positive Plate
(Center) New Exide Mipor Separator
(Right) Exide Negative Plate

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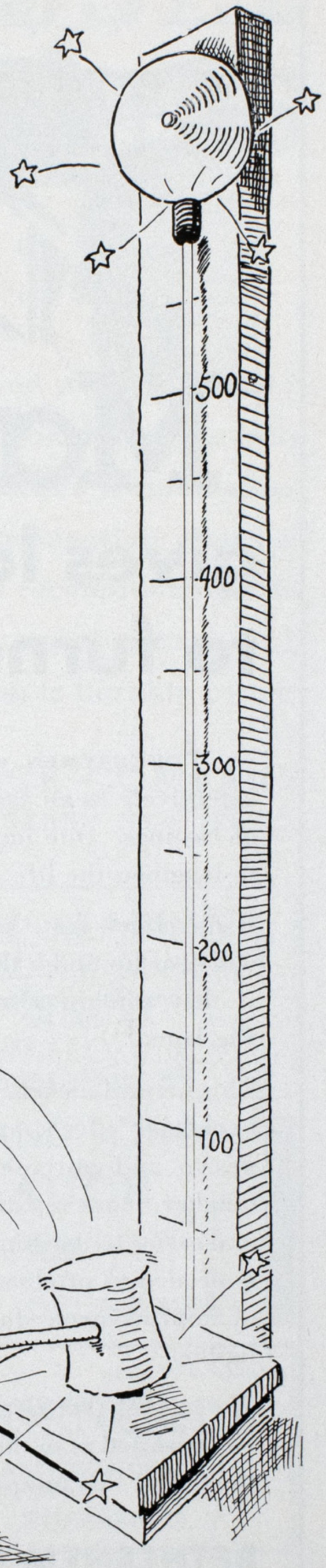
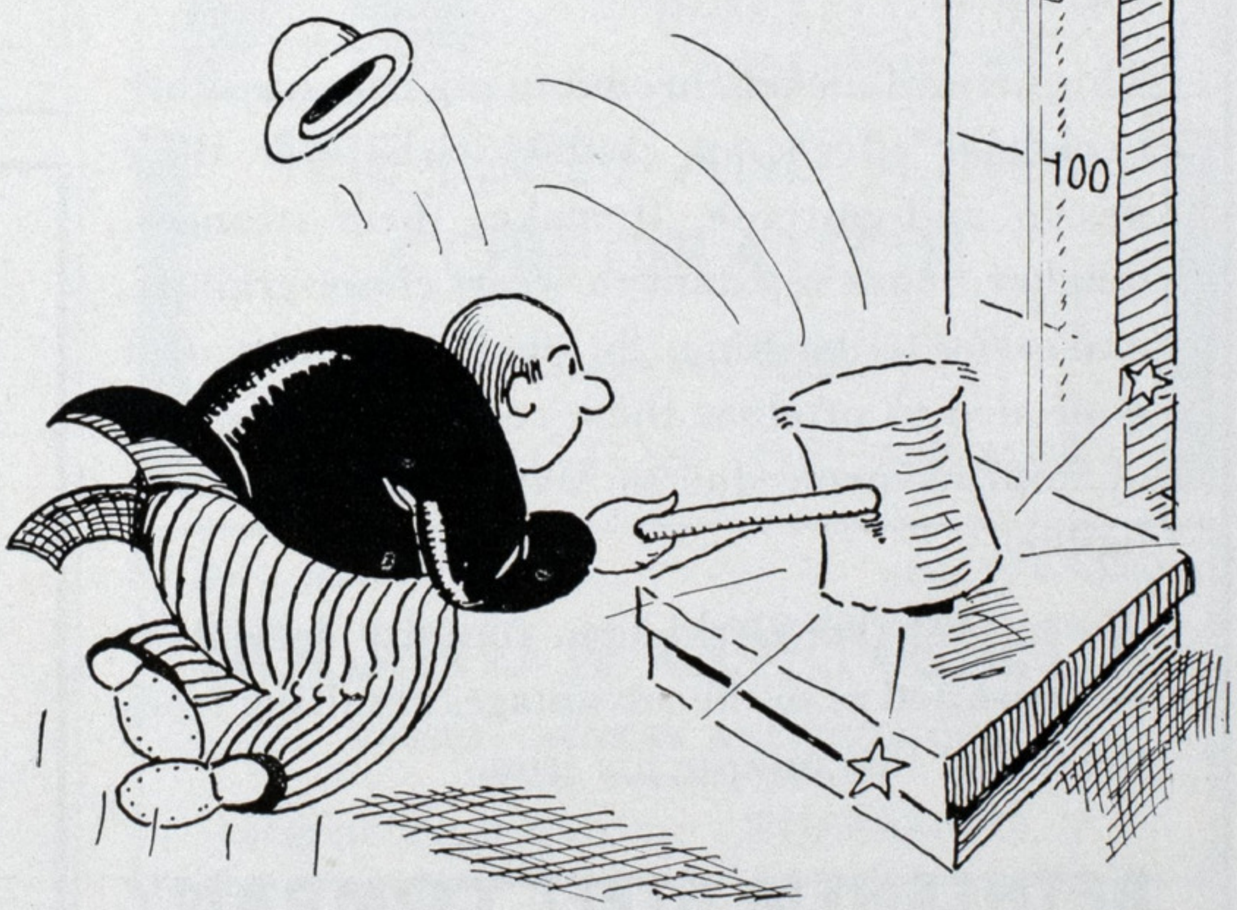


NO payment should be made from the National treasury unless there is an adequate return to the Government in terms of public welfare. A subsidy to shipping meets this test when properly planned and rightly applied.

Many Americans have an aversion to subsidized shipping on the assumption that it implies a gift from the treasury. They fail to realize that when a National emergency comes the benefits resulting from an ample fleet of vessels at hand, an adequate corps of trained men to man them, and the existence of efficient shipyards to supply new construction are very definite and tangible.

Surely the substance of a great National need should be met without fear of the name by which it may be called.



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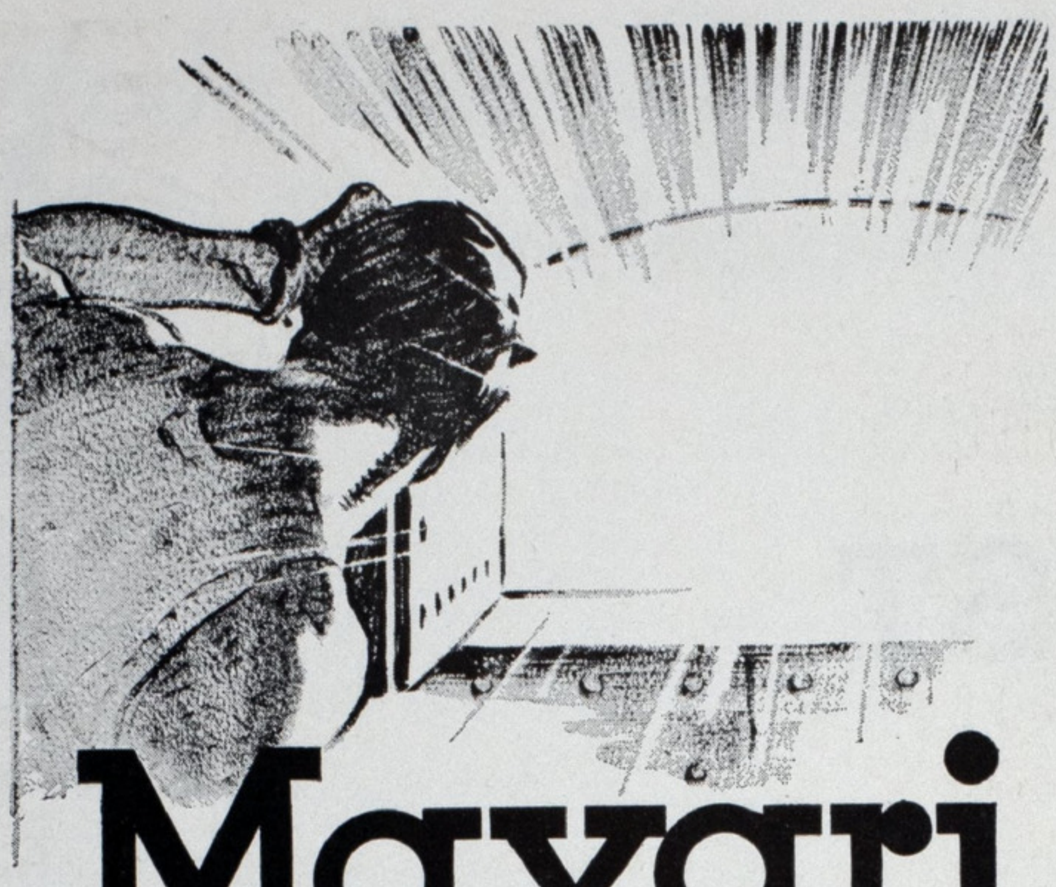

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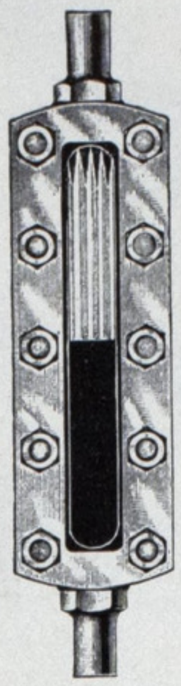

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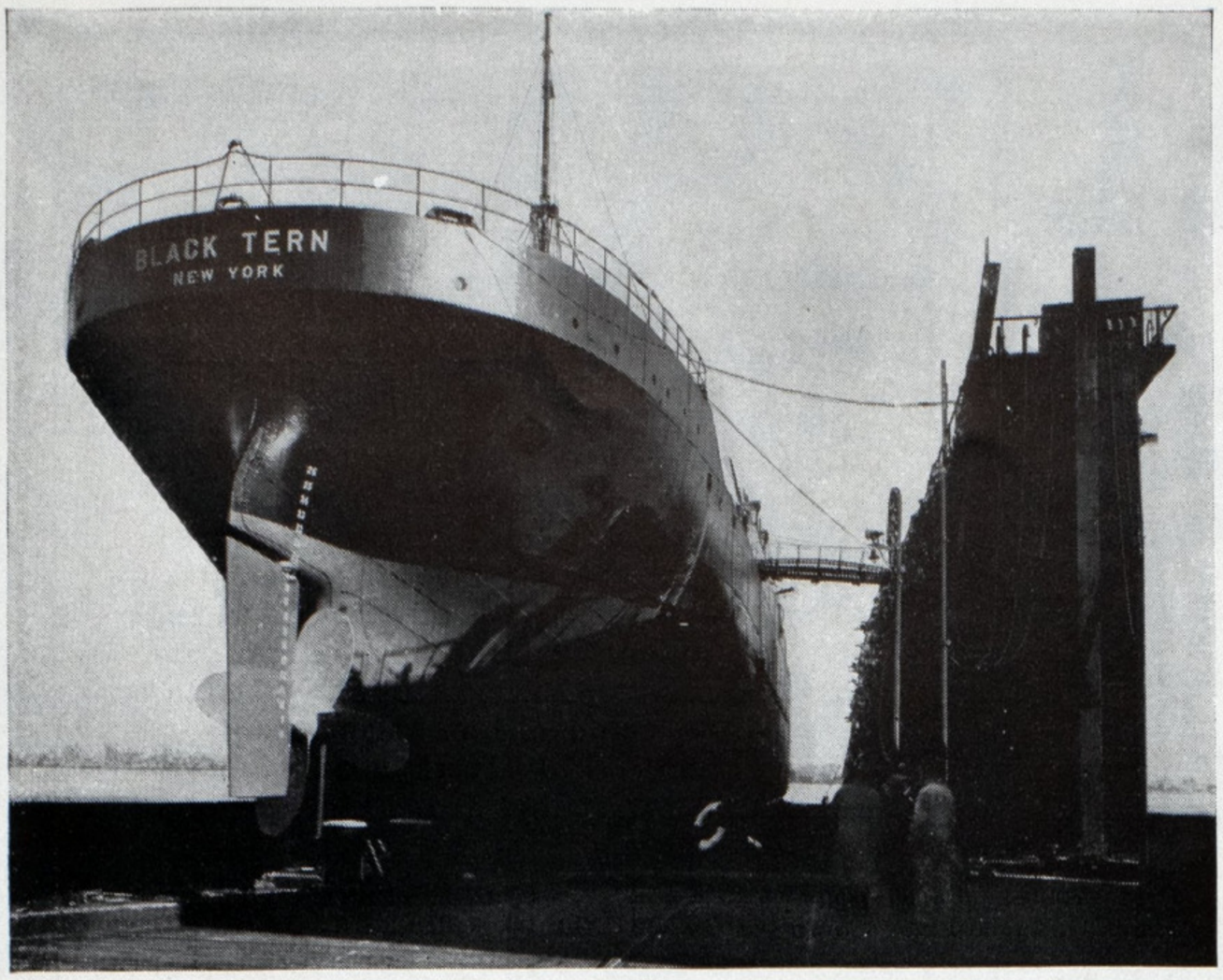

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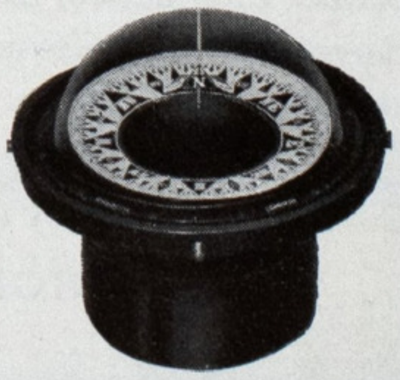

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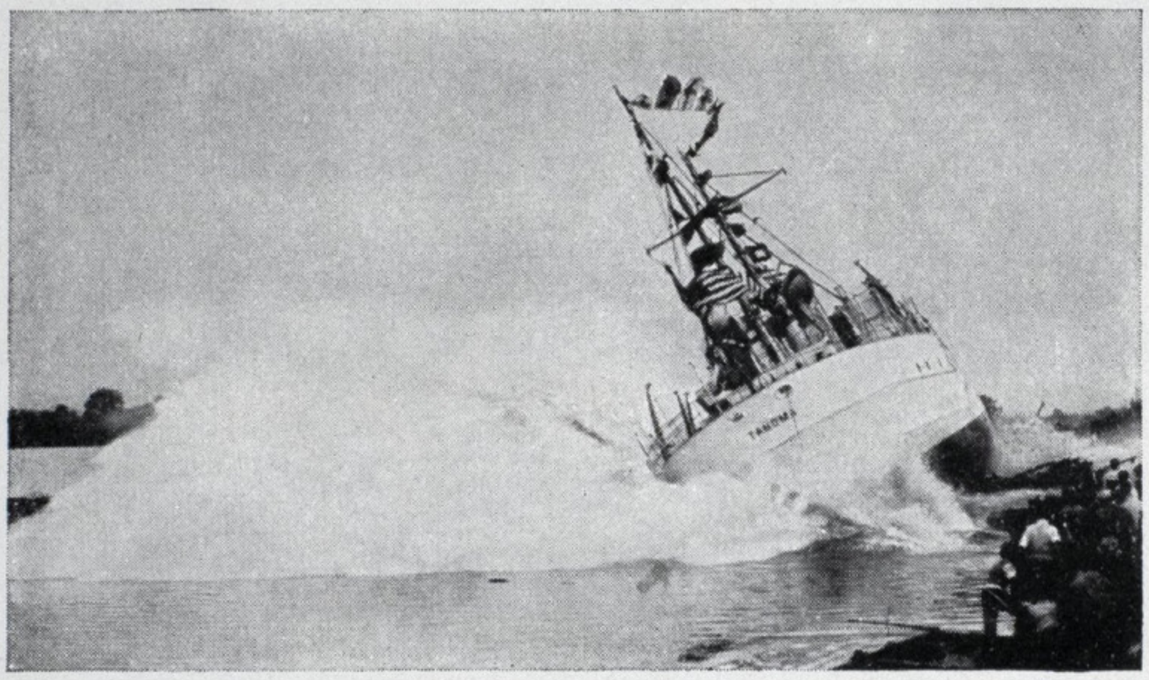

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The auxiliaries, as on the ESCANABA, are also of De Laval make and include for each ship:

Two 35 kw. turbine driven generating units,
A turbine driven main circulating pump of the high speed, propeller type,
A motor driven auxiliary circulating pump, likewise of the centrifugal type,
Two motor driven, vertical shaft main condensate pumps,
A motor driven, vertical shaft auxiliary condensate pump,
A turbine driven fire pump,
A motor driven bilge pump,
A motor driven sanitary pump,
Two De Laval-IMO fuel oil pumps, one driven by a De Laval velocity stage turbine and one by motor,
An auxiliary fuel oil pump of the same type,
Two De Laval-IMO lubricating pumps driven by motors, and
A De Laval-IMO lubricating pump built into the main unit.

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TRENTON, NEW JERSEY

2076

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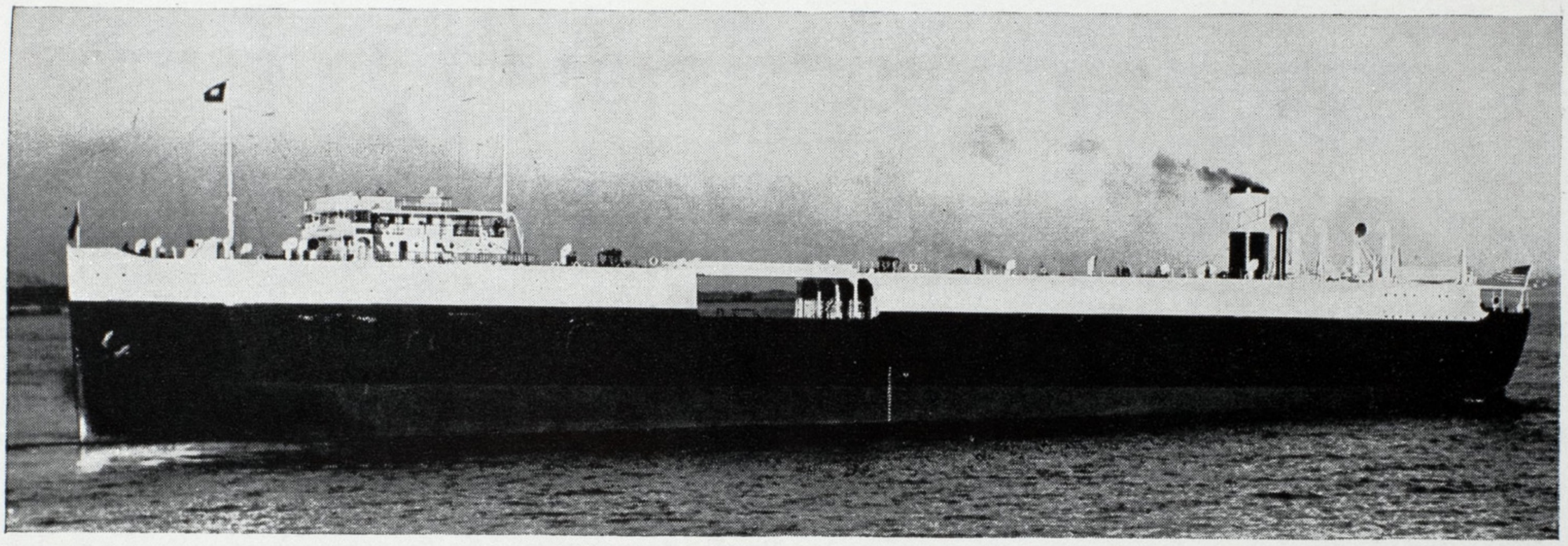

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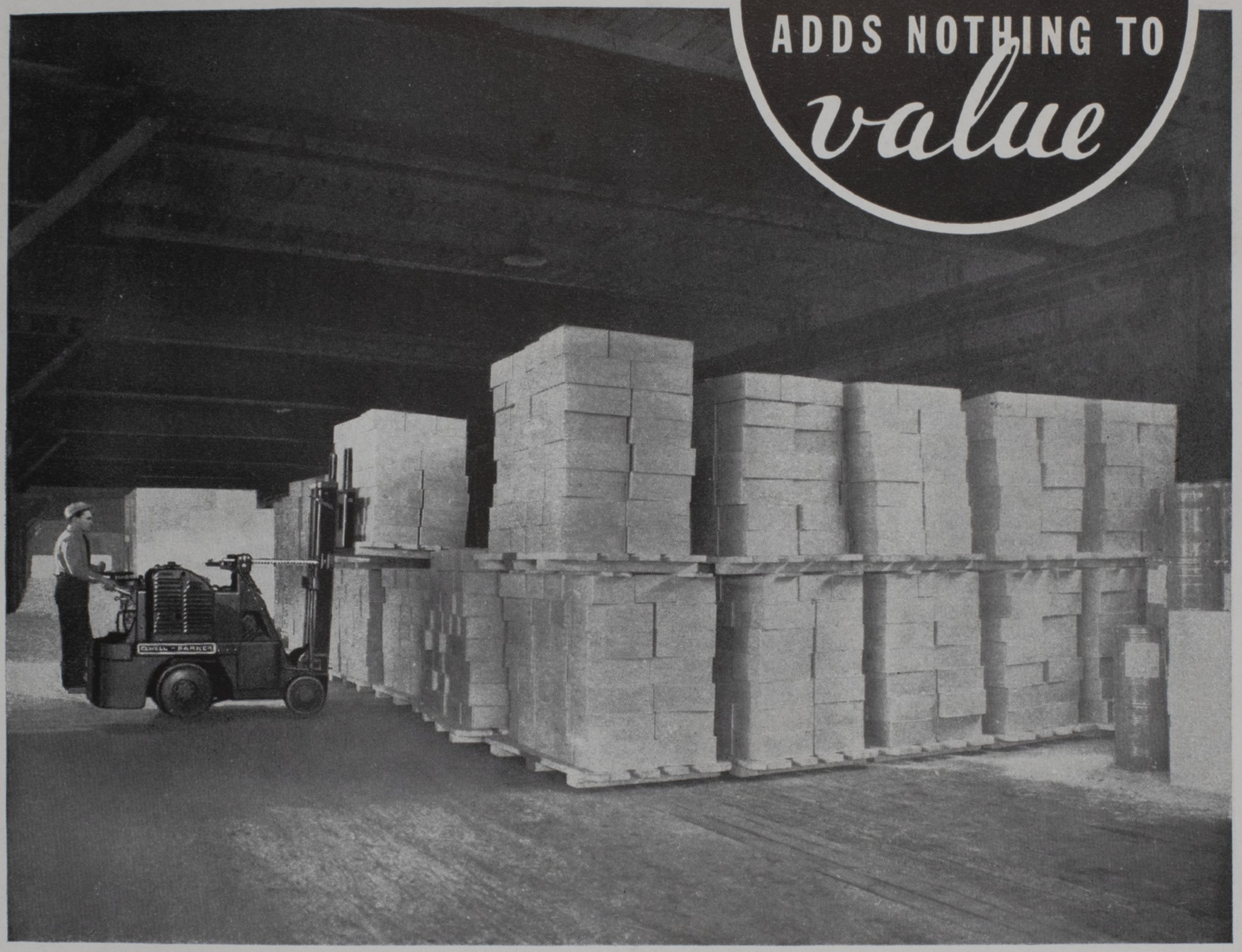

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